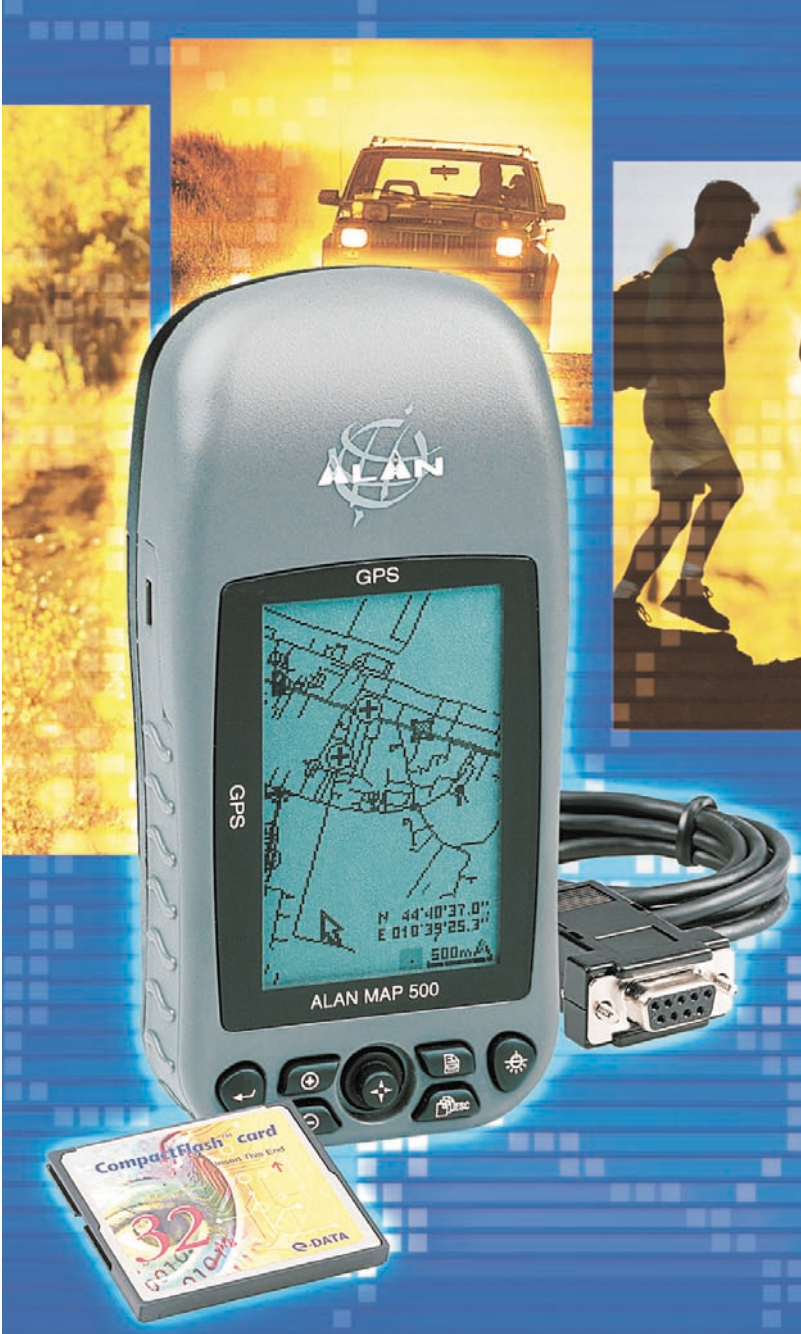
Advanced cartographic navigator

ALAN®



ALAN MAP 600

by MIDLAND®

User´s Manual

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All our hardware/software/firmware updates, as well as the newest operating instruction version may be downloaded under www.cte.it

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1 Important Warnings

1.1 Symbols used

For ease and convenience in reading this manual, symbols are used to highlight urgent situations, practical advice, and general information.

Exclamation marks such as this one indicate a crucial description regarding technical repairs, dangerous conditions, safety arnings, advice and/or important information. Failing to observe these symbols may result in serious problems and/or damage and/or personal injury.

Note pages such as this one indicate key practical advice that we recommend following to ensure MAP 500's optimal performance.

1.2 Warnings

Warning!

Pay close attention to all of the warnings below. Failing to observe these warnings may result in serious problems and/or damage and/or personal injury.

- **This GPS is intended solely as an aid to navigation.** This receiver should not be considered a substitute either for standard navigation procedures or for reasonable prudence and judgment.
- **When using this receiver in a vehicle, do so only when you are not the driver, when the vehicle is stopped, or in an emergency.** Using this receiver while driving is dangerous and may cause accidents or collisions. While driving, pay attention to your driving!
- **When the sockets are not in use, protect them with the rubber cover.**
- **Observe all precautions regarding use of the batteries.**
- **Do not use alcohol, solvents, or abrasives to clean MAP 600**. Use a soft, clean cloth that is slightly damp with water. In more difficult cases, use a mild detergent.
- **Do not expose MAP 600 to ambiental conditions which are excessively humid or dusty, or to temperatures outside the -10°C to +70°C range.** Also avoid exposure to direct sunlight. For example, do not leave the receiver on the dashboard of a vehicle which is exposed to summer sunlight, or to alpine temperatures during the winter.
- **Avoid jarring, mechanical shock, and excessive vibration.** The receiver was designed to resist jarring and vibrations that are within the norm of any electronic device.
- **Do not open the receiver for any reason.** MAP 600's precision mechanics and electronics require experienced technicians and specialized equipment. Unauthorized opening of MAP 600 will nullify the warranty and will damage the waterproof poured chassy parts.
- **Do not replace or recharge the receiver's batteries in potentially explosive environments.** A single spark may cause an explosion.

2 Introduction

2.1 Your MAP 600

Congratulations on your purchase! The MAP 600 is a GPS-receiver with high precision map display, electronically GPS-Compass, Trip PC und additional Auto – Routing – Function. It is various usable and an excellent and precise Navigation-Help in the Outdoor- area or on a Motorbike.
The map 600 is navigation equipment, which offers the function apart from the conventional orientation possibilities (with 1000 waypoints, 50 routes and 8 Track Logs with altogether 20.000 points) to automatically calculate and show up to 20 road routes. From the continuously precisely computed position, the input of the desired way and with the help of the map data the route details are computed automatically and indicated while driving. The announcement (the distance up to the crossing, in which direction and road is to be turned) can take place alternatively with and without map display or also as detail list. Should be deviated intentionally or inadvertently from the given route, immediately a new way is computed. Further the user can select the auto zoom, avoid highways and optimise a route and set middle points.
Beside the precise and fast positioning by satellite navigation, the integrated map representation with nine-level zoom shot and high detail accuracy convinces. Together with the optionally available detail maps the map 600 offers the possibility of finding roads or interesting objects (like restaurant, hotel, shopping possibilities, airports, stations and much more). The Map600 is water resistant and offers the possibility to expand the memory over Compact Flash Cards (CF-Cards) as well as saving of several files and selecting individually over a file manager.

Principal features and abilities of your MAP 600:

- Reception and acquisition of up to 12 satellites
- Menu selectable in 6 different languages
- GPS altitude indication is already converted to altitude over sea-level
- The most used national coordinate systems in Central Europe and map data (e.g. Gauss Krueger, Swiss and Austrian lattice systems) are integrated.
- 1000 Waypoints (geographical references)with associated named and graphic symbols programmed by the user
- 50 Manual Routes with max. 150 Waypoint per Route
- 20 Auto Routes with Start-, Middle- and Endpoint
- up to 9 track logs of your movement (altogether 20.000 points)
- Integrated cartography with 9 levels of zoom as well as display/hide of reference symbols as desired
- Large back-lit LCD display with adjustable contrast
- Possibility of memory expansion using ordinary Compact Flash cards (not supplied)
- Ability to select various graphic representations of your position and direction of movement
- Compact Flash (CF) memory card, which memorizes maps
- Connectable to a PC for downloading of maps and updating of operating system
- Uses two normal AA batteries, including rechargeable ones (set not supplied)
- Multi-functional Joystick for practical use
- External antenna socket for use inside vehicles

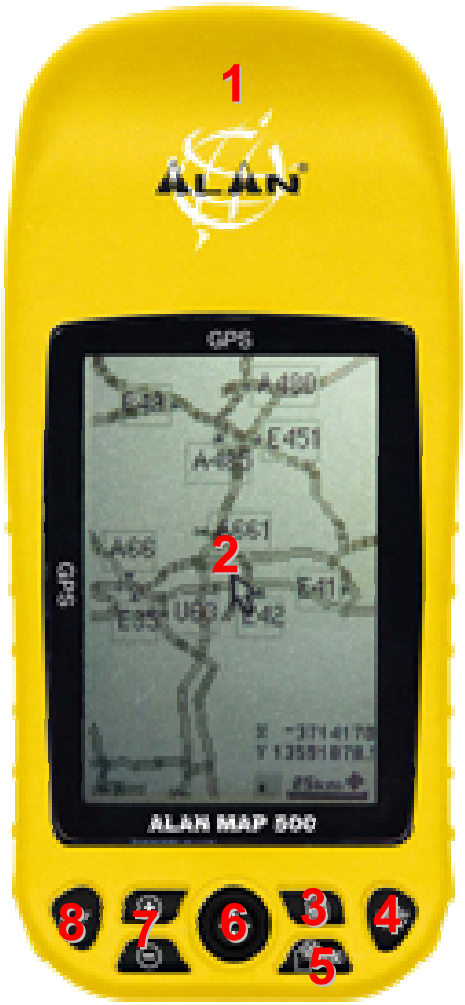
Further Information you can find under www.cte.it.

The MAP 600 contains various functions, that's why you should come to know the functions step, by step for optimal using.

3 Description of MAP 600

3.1 Buttons and controls

3.1.1 Front Panel



[1] Integrated GPS-Antenna - for signal reception from GPS satellites. For optimal reception, the antenna should be pointed towards the sky at an angle of approx. 45 degrees.

[2] LC-Display(liquid crystal)– displays different pages (screens), command menus and modes of operation.

[3] Button (Menu) – accesses the command menu available for each page (screen) of the receiver and for programming of various functions.

[4] Button (On/Off/ backlighting).
Serves two functions:
- holding down the button for at least 2 seconds, the receiver turns on/off
- when the receiver is turned on, briefly pressing the button activates and deactivates the display backlighting

[5] ESC Taste (pages/exit) – for selection of main pages (screens) and going backwards through the command menus without creating or changing settings.

[6] direction Joystick – for using many functions, such as scrolling through maps on the screen, moving the cursor, etc.

[7] + and - Buttons (Zoom) – for enlarging and reducing the scale of maps.

[8] Button (confirm) – confirms commands selected in the menu.

3.1.2 Back Panel and Connections

[9] Threaded junctures – for mounting on the bracket

[10] Data socket (on the bottom of the receiver, under the protective cap) – for connecting to a PC via the DL 500 cable for
downloading of maps and various data, using a standard NMEA.

[11] 3V max socket (on the bottom of the receiver, under the protective cap) - 3VdC socket for recharging Ni-MH batteries using a suitable AC battery charger (or DC cable adaptor).

[12] Lever on battery well cover – for opening the battery compartment.

[13] Battery compartment – for insertion of 2 AA batteries, either alkaline or rechargeable Ni-MH.

[14]] External antenna socket – for the connection of an active external antenna, for use when there is insufficient visibility of the sky (e.g., inside a vehicle).

Do not connect the battery charger when using normal alkaline batteries (or other non-rechargeable batteries) as this may damage the equipment.

Remove the protective cap from the sockets only when using them; this will avoid exposure to humidity or other damaging agents.

Do not remove the batteries before switching off your MAP 500! All the internal settings, the new waypoints and routes are in fact permanently saved in your MAP 500 only in the switching off.

4 Preparation

4.1 Unpacking

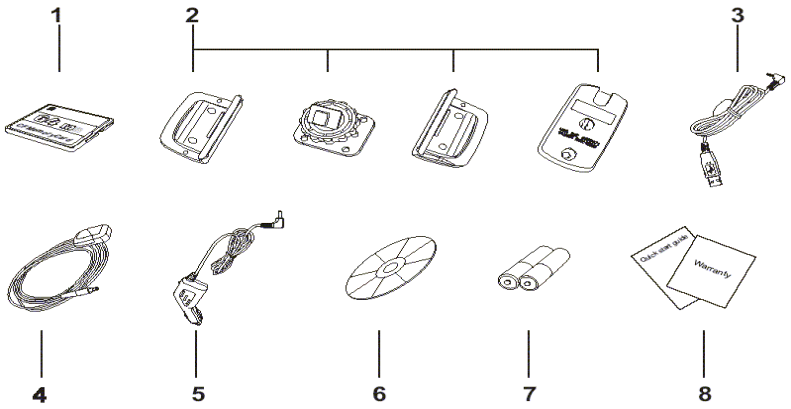
When opening the box containing your receiver, ensure that the package includes:

a. GPS Map600 Receiver
b. Quick guide
c. CD-ROM with detailed user manual
d. MapRoute installing program to collect maps
e. Certificate of warranty
f. serial RS232 data cable

Depending on the model, some parts may already be attached/connected to the receiver. In any case, if any parts are missing,
contact your supplier immediately.

To use of the Map600 efficient, you also need Detail maps for Europe, 2 rechargeable batteries and one CF-Card. For a comfortable (easy and quick) transfer of the Detail maps on the CF-Card, we recommend to use a CF-Card Reader and Writer.

4.2 Optional accessories

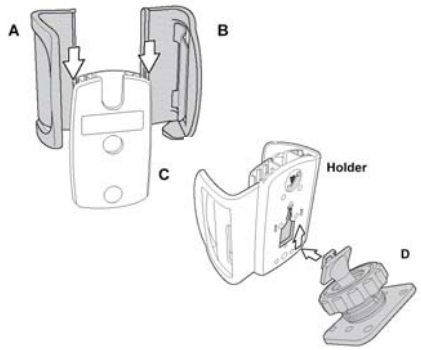


1 Compact Flash Memory card (CF-Card)

For memorizing digital maps, you can use CF cards of various capacities: 16, 32, 64, 96, 128, 256 and 512 MB too.

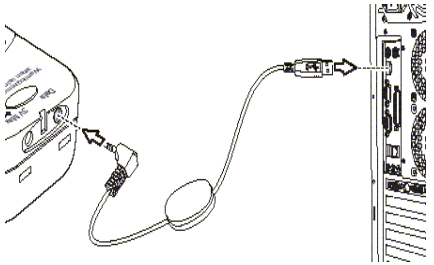
2 Carholder

When using your MAP 600 in a vehicle, attach it to its mount to the dashboard using the 3M tape supplied. For optimal reception and signal reading, move the receiver as close as possible to the windshield and keep it at a 45° angle to the sky. We recommend using an external antenna.



3 Data cable

2 kinds of cable are available:
• *RS232 lead* (9pin SUB-D connector for COM port) - with some versions in the scope of supply;
• *an optional USB lead* for the data transmission between PC and GPS, (Download /Upload) and as NMEA 0183 interface for other applications of software usable.

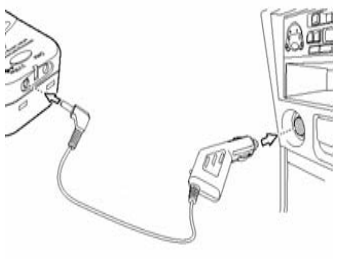


4 Active external antenna

The active antenna improves satellite reception for mobile use inside vehicles. Windshields with dark screens may negatively influence reception. In this case, using an active antenna resolves the problem. Insert the active antenna's male MCX connector into MAP 500's external antenna connector and attach to antenna above the roof of the vehicle, on the sun visor, or somewhere that has a very ample view of the sky.

5 Adaptor for cigarette lighter plug

When applying a voltage between 12 and 26 VDC to this connector, you provide a power supply to the receiver and simultaneously charge the batteries.



6 Detail maps

Various CDs are available (optional), such as the European set on 2 CDs or the limited version with Germany maps only.

7 Rechargeable Batteries

Two rechargeable Ni-MH high-capacity AA batteries are supplied.

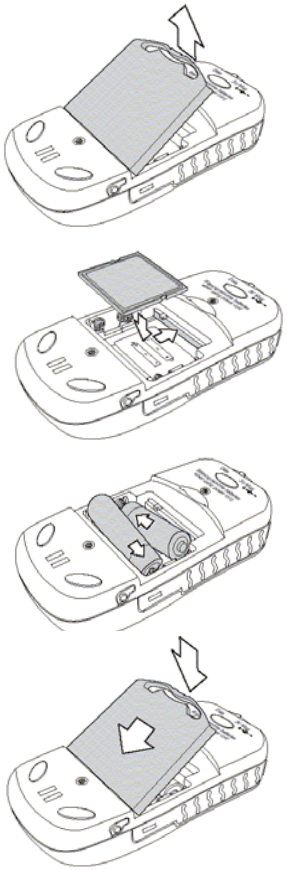
4.3 Installation of a CF memory card and batteries

The MAP 600 has a slot for Compact Flash memory cards (CF maps) with a capacity up to 512 MT for reading in detailed map data. We recommend to use only 256 MB map files, because more data has a bad influence of the functions e.g. the Auto-Routing.
The GPS needs 2 batteries type AA, which are inserted into the battery slot. Use only new or fresh batteries.
The following battery types can be used:

a. Alkaline batteries (not rechargeable)
b. rechargeable Ni-MH-batteries (nickel metal hydride).

To insert the CF-Card and Batteries switch of the MAP 600.

1. Open the battery box on the back by pushing the battery box cover back at the cover.
2. Decrease to battery box cover.
3. Insert the CF card so that the inscription side is showing to you (can vary depending on the CF-card) into the slot. (The card must be easily pushed in, otherwise you have to try it carefully differently).
4. Push the memory card completely into the slot.
5. Insert the 2 batteries in accordance with the polarity markings into the battery box.
6. Close the battery box and make sure that the battery box cover is totally closed.

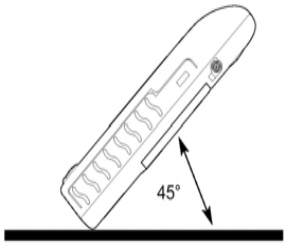


Further information about usable Battery types, rechargeable Batteries and Memory Effect you can find in the Appendix A.

5 The first time you use your MAP 600

5.1 Turning on/off

1. Find a place outdoors which has a wide view of the sky, with as few obstacles (buildings, radio towers, plants, etc.) as possible. Adjust your GPS so it is facing upwards and is at a 45-degree angle from the ground.



2. To turn the receiver on/off, hold down the button for at least 2 seconds. In the Display a welcome page with information about the installed Operating system appears. Afterwards a warning screen appears, which has to be confirm by pressing the **ESC** button. If you press two times **ESC** the pages will quicker disappear. Wird der Warnhinweis nicht innerhalb einer Minute mit **ESC** bestätigt, schaltet das Gerät automatisch aus.

WARNING!!
All Data in Map600 is provided for reference only. User assume full responsibility and risk when using this device.
Esc to agree

3. The Satellites page will come up on the screen.

4. Press 2 seconds on the button to turn off the Map600.

   If you press a short time one the button the lightning is turning on.

5.2 Initialisation of GPS receiver (first receiving)

Before you use your navigation help for the first time, the MAP600 must determine his own position like all other GPS receivers automatically. Your MAP 600 must execute this process (initialisation) always, if the device has been transported after the last use turned off to a remote place (more than 500 km) or the device wasn't taken into operation over a longer time period (1 month).
This procedure must be passed through after the purchase of your device once and can last for some minutes. In the later use this process takes no longer so much time since , because the MAP 600 can determine its position data faster.
If the initialisation has been successful, you only have to switch on the device for later operation.

1. Press Two times the button or one time the button, move the Cursor up or down to the field **Main Menu** and confirm with ↵.

2. Choose with help of the cursor the function **Could start** (initialisation) and confirm with ↵. The initialisation is started and in the Satellite page the message **Acquiring Sats**.. appears.

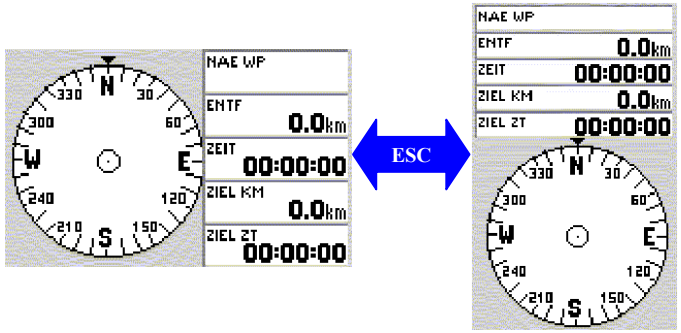
5.3 Establishing your position

As far as the MAP 600 received 3 or more Satellites, it can calculate it´s position and the display automaticaly changes to the Mappage. Until now the device is ready for Navigation. The Mappage showes the position and the direction of the trip with respect to the card view.

6 Display settings

6.1 Rotating the main pages

You can rotate viewing of the display in order to better use the longer side of the display. In some situations, this is very convenient, particularly when viewing the **MAP** page. To rotate a page, hold down the **ESC** button until the screen rotates.



Be careful not to confuse this function with the one described in the previous paragraph: briefly pressing the button selects a page, while holding down the button rotates the page.

6.2 Display backlighting

If ambient lighting is not adequate for viewing the display, press the button to light up the display. Pressing the button again will deactivate the backlighting. The backlighting, deactivated after a determined period of time, is enabled every time any button is pressed.
The time of the period you can select in the menu **Settings**. You can choose between 30 seconds, 3 or 10 Minutes or always. If the backlighting turns off, you can activate it again by pressing each button.

Backlighting speeds up battery consumption; use this feature only when necessary.

6.3 Adjusting display contrast

You can adjust the display contrast to optimize visibility in various lighting conditions.

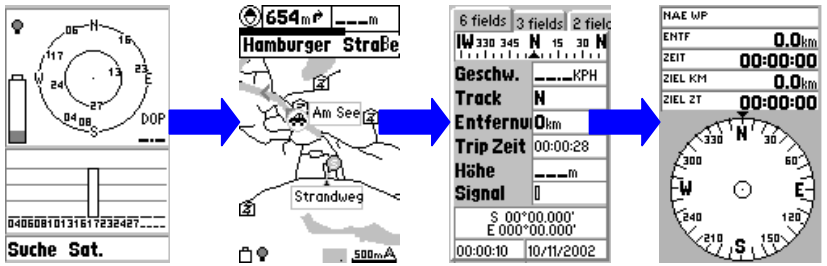
1. Go to the Satellites page. This page appears after turning on or if you go into the main menu (press two times the button) select **Satellite** and confirm with .
2. Move the Joystick to the left or right respectively to reduce or increase the contrast. While using this function, the display will show the contrast level.
3. Press the button to confirm or **ESC** to exit without saving the new contrast setting.

Another way to adjust the display contrast, is given by the Main menu:

1. Press 2 times the button to get the main menu.
2. Chose **LCD Level** with the Cursor and confirm with .
3. Move the Joystick to the left or right respectively to reduce or increase the contrast. While using this function, the display will show the contrast level.

7 Navigating the command menus

Each page displays a series of options and settings, accessed through the command menu.
The procedure for navigating the menus is as follows:



1. Press the (menu) button: the display will show the menu options for the selected page.
2. Move the Joystick up/down to highlight the desired option.
3. Press · (confirm) to activate the option.
4. Select other options as desired, repeating steps 2 and 3, as will be further described ahead in the paragraphs outlining each function. When using this function, you can go back to a previous level by pressing **ESC** .

The last two options, Setting and Main Menu, are available on every page and allow for, respectively, personalizing your GPS (backlighting mode, map orientation, units of measurement, etc) and for quick access to frequently used functions (geographical reference settings, routes, etc).

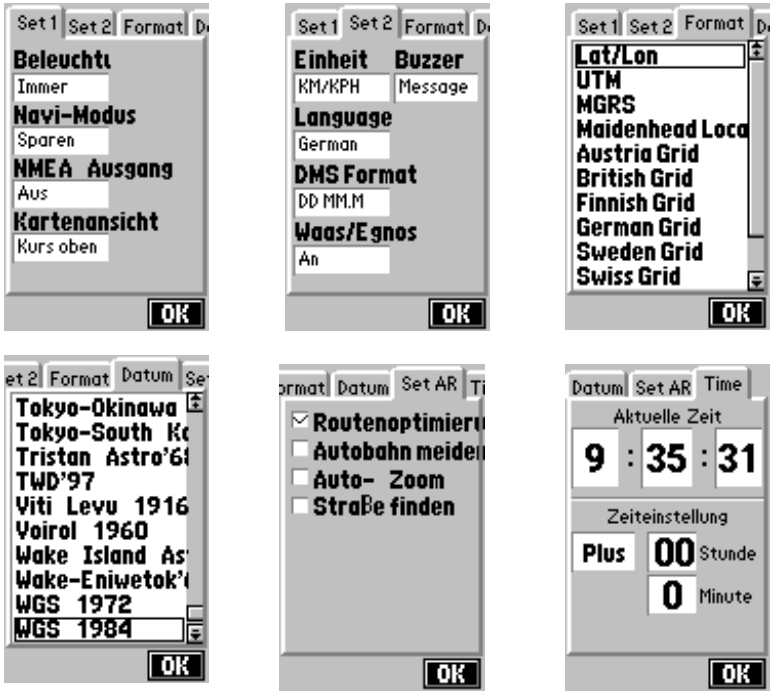
Pressing twice quickly provides quick access to the Main Menu from any page.

Occasionally, you will be asked to confirm or cancel settings you have selected, pressing the check or cross buttons respectively. These functions can be enabled using the Joystick and the button.

7.1 Menu Settings

This menu allows the user to personalize their receiver according to their needs and for optimum function of the device. This can be called up from any main page, as described above.

The following options are explained in further detail below:



1. From any page, press , then select **Setting** using the Joystick.
2. Press · to confirm.
3. Move the Joystick up/down or left/right to highlight the desired option and press ·. A list of available settings will appear.

4. Move the Joystick up/down to select the desired option and press ↵.
5. If necessary, repeat steps 3 and 4 to change settings as required.
6. Use the Joystick to highlight **OK** and press ↵ to confirm. Don' t forget this step, otherwise no storage of settings takes place! Press **ESC** to leave the menu without saving.

7.1.1 Backlight

Selects the automatic backlight deactivation time (is activated each time by pressing the button). Settings available are: **30 sec, 3 min, 10 min, Always.** With the last setting, you will be required to manually deactivate the backlighting by pressing a second time. The backlight, deactivated after a determined period of time, is enabled at any button pressure.

7.1.2 Navigation Mode

Select the navigation mode for the receiver, based on the battery consumption. The available settings are:

a. **Normal** – maximum settings (rapid updating of data on the display) with normal consumption.
b. **Saving** – reduced settings (data is updated on the display more slowly) with reduced battery consumption.
c. **Simulate** – GPS receiver deactivated with minimum battery consumption. Navigation is not possible in this mode; the only options available are the changing of settings and viewing of maps.

In **Simulate** mode, this setting is not activated: the backlighting is always enabled.

7.1.3 NMEA Output

Data acquired from the satellites can be taken from the NMEA data output (**Data** socket) using an (optional) interface cable. The data can be elaborated using a laptop computer or other NMEA 0183 compatible data interface device (e.g., transceiver, mapping instrument, etc). The available settings are:

a. **Off** (interface excluded) – MAP 500 functions normally without sending data to the interface.
b. **On** (interface active) – data are sent with an update frequency of once per second at a velocity of 4,800 bps, and in the GGA, GSA, GSV, RMC formats. In this state, the option of downloading maps or other data to the GPS via the cable and optional software is deactivated.

Activation of the interface is advised only when necessary, because when it is active, the data update frequency on MAP 500's display is slightly slower.

When using the NMEA ON interface, you cannot enter into navigation mode Simulate.

In order to have the serial port properly working even when the NMEA output is deactivated, we suggest you switch ALAN MAP500 off and then on.

7.1.4 Map Direction

Orientation of the displayed map can be changed on the Map page as follows:

a. **Track Up** – the map is automatically oriented towards the direction in which you are moving. The map rotates at 45° steps to maintain this orientation. In this mode, the icon in the top left corner of the display will constantly show North as the dark part.

7.1.5 Units

This setting determines the units of measurement used by MAP 600:

a. **Mi/MPH** (Miles/Miles per Hour) – for use in Anglo-Saxon countries.
b. **KM/KMH** (KM/KM per Hour) – for land navigation in non-Anglo-Saxon countries

7.1.6 Language

With this feature, you set the language of the GPS menus. Italian, English, Spanish, Dutch, German, French are available.

7.1.7 DMS Format

The attitude for the view settings (traditionally) degrees, minutes, seconds of **DD MM SS.S** or in the today wide-spread decimal minute mode of **DD MM.M**.

7.1.8 WAAS / EGNOS

Activates the setting for the additional indicator correction by special geostationary satellite signals.

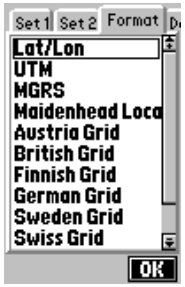
a. **On**- additional satellite signal correction is switched on (in case of receiption appears DGPS)
b. **Out** - without additional correction signal this setting is always recommended if user does not know exactly whether a WAAS or a EGNOS signal is receiptable at present.

7.1.9 Buzzer (acoustic Signal)

Here the acoustic Signal could be defined. The following options are available:

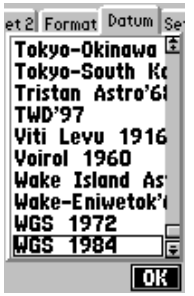
a. **Message** (Beep to inform the user about messages)
b. **Key** (beep by pressing buttons)
c. **Bouth** (Key and Message together)
d. **Off** (no acoustic Signal)

7.1.10 Changing Coordinate format



Normally, latitude and longitude are used to define a geographical position, although other systems exist which may be selected for special applications. In addition, you can still choose further internationally used systems, e.g. the German Gauss Krueger system, the Austrian, Swiss, the British and the UTM system, who are automatically linked with the associated map data. The basic adjustment is recommended only if it is necessary to change the coordinate format.
Move the cursor left/ right to select the window **Format**. Use the cursor up/down and the ↵ button to select the standard desired and confirm with **OK.**

7.1.11 Changing map references (Datum)

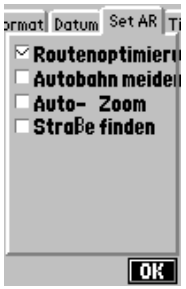


Maps are created using different standards. The most common one is **WGS-1984** (World Geodetic System 1984), used by most GPS devices. For this reason we suggest not changing it as long as it suits your particular needs, as selecting an incorrect standard may result in measurement errors. To select other standards move the cursor left/ right and select the window **Datum**. Use the cursor up/down and the ↵ button to select the standard desired and confirm with **OK.**

In the appendix you can find all available Map600 references (Datum).

The manual changing of the Waypoint Coordinates are only possible, if WGS 84 is selected.

7.1.12 Set AR



On the Page Set AR (Settings for Auto-Routing) the following setting could be selected:

a. **Route optimise**, to calculate the optimal Route,
b. **Avoid Highways**, to drive on smaller Streets,
c. **Auto-Zoom-In**, to zoom in at the corner and
d. **Road Match**, to use the Auto-Routing beside streets.

7.1.13 Time

The GPS constellation allows to read data and time with extreme precision. Time is based on the Greenwich meridian, so if you are located in another time zone, you will be obliged to insert a time zone difference (for Italy an hour more). To select other time move the cursor left/ right and select the window **Time**. (picture) Use the cursor up/down and the ↵ button to select the time and confirm with **OK.**

a. **Plus/Minus** – defines if the time zone difference is plus or minus Greenwich Mean Time.
b. **Hour** – hours of difference with respect to the Greenwich meridian
c. **Minute** –minutes of difference with respect to the Greenwich meridian (for use only in special applications)

7.2 Main Menu

The Main Menu could be chosen from every main Page, by pressing two time on the button or on time and selecting **Main Manu** with the Cursor and confirm with ↵. The Main Menu contains the Quick Selection of the mostly used options (like waypoints, routes, Track Logs ...) with the Cursor an the ↵ button. In the picture all Options are shown.

Waypoints (geographical references) – creation and use of geographical references (waypoints).

Routes – creation and use of routes composed of various waypoints.

Track log – for automatic tracking of the route followed (independently of the route programmed in Routes).

Satellite – option to open the satellite page

Stop Navi/navigation – allows the changing of the Navigation Mode

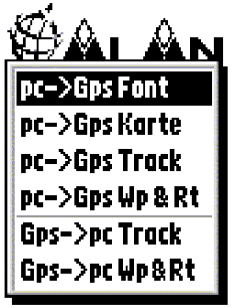
Cold Start (initialization).

Files in CF (File Manager)– allows to manage the files on the CF-Card. E. g. if more than one map file is stored the wanted file can be selected by using the cursor (up/ down) and the ↵ button.

LCD Level – to change the display contrast by moving the cursor (left/right) and confirming with ↵.

About (Viewing of system information) – viewing of map version, map utilised, software version, and other data from the receiver.

Loading (downloading of data) – for transferring data (maps, waypoints, routes, tracks, etc) from a PC to your GPS, and to update MAP 600's operating system using optional software and cables. For further information, refer to the instructions supplied with these accessories.



To modify an option:

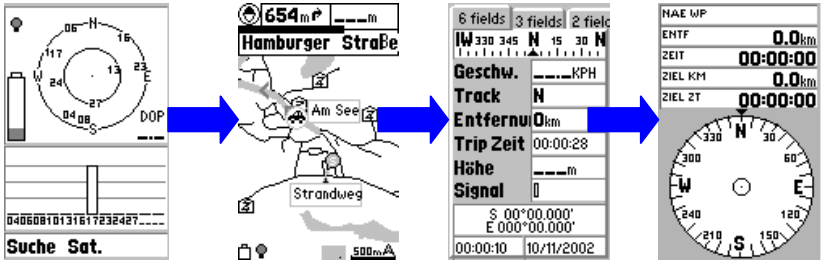
1. Press from any page twice to call up the main menu or press once, highlight **Main Menu** with the Joystick and press ↵.
2. Use the Joystick to select the option desired.
3. Press ↵ to confirm and **ESC** to leave the menu.

Follow the directions in the paragraph below regarding the option selected.

8 Description of the main pages

8.1 Selecting the main pages

To change the Main Pages, press the **ESC** button untill the wanted page appears. The page appears in the following order:



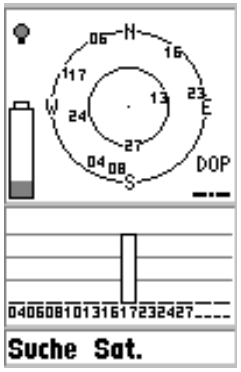
The Satellite page only is displayed after turning on the device. Afterward this page can be opened by using the Main Menu.

If the Auto-Routing-Function is active, instead of the Compass page the Arrow Guide page is displayed.

The Compass page is shown , if the **GoTo** function to a Point or a Route with **Set Navi** was activated.

8.2 Satellite page

The **Satellites** page shows the acquisition of satellites by the receiver and is useful for optimising the antenna's directional pointing.



1. Concentric circles – represent the approximate position of each satellite (orientation towards North) relative to your position.
The two circles indicate the elevation (the external one represents the horizon, the internal one a 45-degree angle from the horizon).

The centre of the internal circles indicates the perfectly vertical position. The numbers which appear are the identification numbers of the satellites received. The dark numbers represent the acquired satellites (from which you can read data). In this example, satellites , , , and are acquired. Satellite is at 45° from you and number is on the horizon.

2. DOP (Dilution Of Position) – indicates errors introduced to the system.

3. Vertical bars – represent the signals of the satellites received. Below each one appears the identification number of the satellite, its length being proportionate to the intensity of the signal received. The dark bars indicated satellites acquired.

4. Coordinates of your position/DGPS – appear once the GPS has acquired at least 3 satellites (at least three dark bars must appear, as described in the above paragraph) or DGPS is displayed if WAAS or EGNOS signal has been received.

5. Battery icon – indicates the remaining battery power.

6. Backlight icon – indicates if display backlighting is active. When it is dark , the backlighting is deactivated; when it is light , it is activated.

It is important to keep in mind satellites are being acquired only if Acquiring Sats appears at the bottom of the display. If Simulation appears, you will need to change the navigation mode.

During the satellite acquisition phase, it is possible to monitor the signal and optimize the pointing of your antenna to lengthen the bars and hasten the acquisition process.

If the message Poor GPS Signal! appears, check that there are no obstacles above you that might impede MAP 600's reception of the satellite signals (tree branches, beams, poles, etc). In particular, do not use this function while inside a building or vehicle (without at least using an external antenna). Press to confirm, move to a more open area, and try the procedure again.

8.2.1 Menu of the satellite page

Press the button to access the following options:

a. **Navigation/Stop Navigation** for selecting navigation or simulation mode.
b. **Einstellung** for access to the settings menu.
c. **Hauptmenü** for access to the main menu.

If you do not need to actually navigate, but are only using your receiver to enter settings or consult maps, we suggest you deactivating the receiver by entering **Simulation** mode. This mode considerably reduces the battery consumption. Navigation activates navigation, while **Stop Navigation** deactivates it by selecting simulation mode. When **Simulation** mode is activated, this will be displayed at the bottom of the **Satellites** screen in the place of your coordinates.
From the **Satellites** page, you can switch from Navigation to Simulation without entering the **Settings** menu: press highlight **Navigation** or **Stop Navigation** (Simulation mode) and press . to confirm.

8.3 Map page

This page shows your position and direction of movement, shown by the symbol inside the GPS' memorized map. In this map, you can create geographical references (waypoints) or routes as desired.

The **Map** page includes the following details:

1. Direction and current position – The symbol shows the current position and the angle of direction of movement (displayed either towards North or towards a preset destination). This is obviously different from a traditional compass as it indicates direction only during movement. Furthermore, if the symbol is dark, this means that you have acquired the minimum three satellites necessary for navigation, otherwise position your GPS better for acquisition.

2. Cursor – A useful instrument which allows you to verify the coordinates of a point by simply moving the cursor to that position using the Joystick. The cursor also allows you to move the displayed area of the map: just move the cursor close to the edge of the map and that part of the map will appear on the screen.

3. Scale of map, position coordinates, direction and speed – Scale and coordinates of position are shown right down in the display, direction and speed are indicated above in the left corner of the display.

The following functions can be implemented:

Change the scale – briefly press the zoom **+** and **-** buttons to increase or decrease the scale. The scales available are:

50m – 100m - 200m (0.2miles) - 500m (0.5miles) – 1Km (1mile) – 2Km (2miles) – 5Km (5miles) – 25Km (25miles) 100Km (100miles).

Fade in/out Scale, coordinates, direction and speed – hold **+** pressed the key for approx. 2 seconds.

4. Viewing mode – The symbol on the bottom right, beside the scale, constantly displays the active viewing mode of the map:

Navigation mode – the display indicates the area relative to your current position. The cursor is not shown, but as soon as you move the Joystick, it will appear close to your current position.

View map mode – the display indicates another area different from that of your position. The cursor is always visible to allow you to move between different areas of the map, and to use various functions.

You can switch between the two modes by briefly pressing ↵. This provides quick movement from the area viewed in which you are travelling to a place where you are going, and vice-versa. This allows you to check the information on any place while keeping an eye on navigation, as desired.

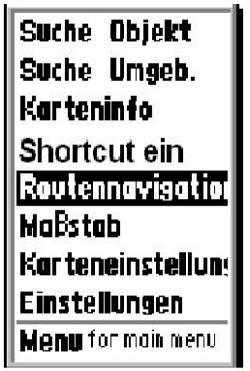
5. Map viewing reference – When you enlarge/reduce the map, the black point inside the grey square changes format and position depending on the settings, representing the size and position of the viewed area with respect to the entire map.

6. Streets – Normally, the **Map** page also shows the streets memorized in the electronic map. If you wish to hide/unhide these streets, hold down the **-** button for two seconds.

7. Reference icons – Indicates the presence of various cartographic points pre-programmed into the map: airports, railway stations, hotels, restaurants, etc. These symbols can be made to appear/disappear individually on the map.

8.3.1 Menu of the map page – Gerneral

Press the button (Menu) to select one of the following function. The functions will be activated by pressing the ↵ Button:



a. **Search by City** is the searching function to find points of Interrests in the map (city, Street, Hotel, ...).
b. **Nearest Search** is the searching function in the nearest surrounding with reference to a special point (e.g. the actual position).
c. **Map Info** shows the information about the pointed region.
d. **Shortcut On/Off** means to show or hide the Airline (dotted) from actual Position to a Reference Point
e. **Navigating Route** allows to select Options for the Auto-Routing.
f. **Map Scale** to change the map scale by moving the cursor sideward.
g. **Setup Map** - settings to change the view of the map.
h. **System Settings** for access to the settings menu.
i. **Menu for the main menu** for access to the main menu.

8.3.2 Search by City

Search by City is the search for reference points (e.g. town, Street, hotel, restaurant, airport, bank, building, gas station etc.). The chosen reference point is shown by a corresponding symbol on the map. Proceed as follows:

1. Open the map page, press the button, select **search by City** and confirm the choice with ↵. In the display **select a region** appears, sorts to towns. To select the town, press the button and spell the town with the Cursor. The moving high and down changes the letters and lateral movement for reaching the next place. With ↵ you confirm the choice.

Furthermore the **+** and **−** button allows to scroll page by page or the Moving of the cursor (up/down) allows to scroll step by step. You reach into the next view mask with a pressure on the ↵ button.

2. In the display appears **select a type** with another choice list: Town, street, hotel, restaurant, airport etc..

3. Move the Cursor up/ down to make a choice and press ↵ to reach the display with the **Fast** (selecting the name) and **Wild Card** (input of letters) search.

3.1 Select the window **fast** search and highlight the window under **select a name**. Press the ↵ button to spell the name of the object with help of the cursor. Confirm with ↵.
Furthermore you can select the lower choice box with the names in an alphabetical order to choose the object with the cursor (high/down) to scroll step by step or pressing the **+** and **−** button to scroll page by page. Confirm your choice with ↵.
Select **OK** button and press ↵ to finish the search.

3.2 The **Wild Card** is recommended in areas, where all names starts similar (e.g. Plaza). Move the Cursor (left/right) to reach the window **Wild Card**. Move the Cursor under the field **Input Name** and press the ↵ button, to spell the name of the object with help of the Cursor. Confirm the with ↵ and select the field **Find.** In the choice box the names in an alphabetical order appears. They could be selected with the **+** and **−** button or Step by Step with the cursor (up/down). Confirm the choice with ↵.
Select **OK** button and press ↵ to finish the search.

4. Finaly the results with information about the Name and the Distance to the wanted Object appears in the display. Down in the display 3 options could be chosen by the cursor and confirmed with ↵.

a. GOTO, to calculate an Auto-Route to the point,
b. ✓, to display the object in the map and
c. X, to leave the menu.

By pressing button, this point could be defined as Way-, Start-, Middle- and Endpoint.

8.3.3 Nearest Search

This function is similar to Search Object, which allows the user to search for the same type of pre-programmed map reference, this time selecting references around the position. To activate:

1. When you have activated the nearest serach option, select **Select A Type**, followed by a list: **City, Road, Hotel, Restaurant, Airport,** etc.
2. Move the Joystick down/up to highlight the reference type you are searching for (e.g., Airport) and press ↵.
3. Press . **Distance** will appear on the screen.

4. Press the ↵ button. This will activate a menu which will allow you to select the search ray from your position (up to 5 Km or 5 miles).
5. Move the Joystick up/down to select the distance, then press ↵. All references (of the previously selected type) within the radius defined in the last step will appear.
6. Move the Joystick down to highlight the reference desired, then press ↵. The cursor will move to the desired reference in viewing mode **View Map**.

8.3.4 Map Info

Map Info is useful to display Information about geographical Reference Points (Streets, city, etc.) of the map.

1. Move the pointer in the map display on a various reference point.
2. Press 📄 and select **MapInfo** and confirm with ↵. In the display the informationpage with the data of the reference point (e.g. Direction, Distance, …) appears. Down in the display 3 options could be chosen by the cursor and confirmed with ↵.
   a. GOTO, to calculate an Auto-Route to the point,
   b. ✓, to display the object in the map and
   c. X, to leave the menu.

8.3.5 Shortcut on/off

These function creates a line, the shortest way from the actual position to the chosen Point.
1. Set the pointer away from the actual position to a various point.
2. Press 📄, choose **Shorcut on** with the cursor and press finaly ↵. In the display the shortest way is shown as a line (with dots).

✎ This function could be deaktivated with the function **Shortcut off**.

8.3.6 Navigating Route

In the menu **Navigating Route** the settings and functions for Auto-Routing could be chosen.
Select with the cursor in the menu Navigating Route and confirm with ↵. After pressing 📄 you will see the submenu with the following function, which are shown in the picture:

a. **Append**, to add Start-, Middle- and Endpoints:
   - **from GPS**, actual Position
   - **Search Object**
   - **Nearest Search**, in a special surrounding
   - **Waypoint,** defined Reference Points.
b. **Insert** to insert Start-, Middle- and Endpoints:
   - **from GPS**, actual Position
   - **Search Object**
   - **Nearest Search**, in a special surrounding
   - **Waypoint,** defined Reference Points.
c. **Move**, to move Points,
d. **Delete**, to delete selected Points (The warning „Are you sure?" must be confirmed with ↵, or denied with **ESC**.)
e. **Delete all**, to delete all Points of a Auto-Route (The warning „Are you sure?" must be confirmed with ↵, or denied with **ESC**.)
f. **Reverse**, to change Start- and Endpoint and so the direction of the route
g. **Calculate**, to calculate the Auto-Route
h. **Guide on/off** to activate or deactivate the guiding of the Auto-Route
i. **Route Detail**, to display the Details of the Route (street, distance and direction)
j. **Route Demo**, to simulate the way,

k. **Save**, to save the Auto-Route. (Maximal 20 Auto-Routes could be stored)

If a Auto-Route is created, in the Display the Name of the Auto-Route and in the window below the Start-, Middle- and Endpoint is shown.

Down in the display the following 3 options could be chosen by the cursor and confirmed with ↵.

a. Map, to show the Auto-Route in the map,
b. ✓, to enter the chosen option and
c. X, to leave the menu.

8.3.7 Map Scale

This is the second way to change the scale of the map beside using the **+** and **–** button. Chose **map scale** and press ↵ to confirm. Down in the display the scale field appears and you can Change the scale by moving the cursor (left/right).

8.3.8 Setup Map

Chose **setup map** and press ↵ to confirm. A submenu appears, were you can:

a. turn the **Measure Distance on** or **off** to get the distance (airline or short cut-----) between points. Chose a Point in the display, confirm with ↵ and Chose the next point and confirm with ↵.
b. change the **map Direction** into **Track up** or **North up**, to orientate the maps individually to the North or to the direction of the movement,
c. **Show Map Dir**ection **vertical** or **horizontal** to change the format of the display (the format also changed by pressing 2 seconds on the **ESC** button) and
d. Select **Show fly Name** with **Name on** or **off**, to show or hide all dynamical Information which appears on the Screen when the Pointer is close the object.

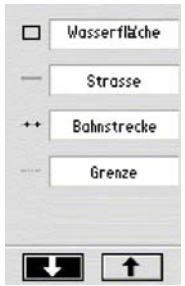
If you press again the 📄 button a submenu appears were you can:

a. **Display Items** to show and hide symbols of the map,
b. **Initial Value**, to show the actual position and
c. **Set Location** to set the selected positions as the actual position.

A choice off symbols are (e.g. Streets, School, petrol, hotel etc.) available, which could be shown ore hide in the to limit the Map Information.

1. Select the menu **Setup Map**, press 📄 and choose **Display Items** and confirm with ↵. In the display all available Items appears. Beside every item is a square were you can active this item.

2. Move the cursor to the field **?** and press ↵. Many pages with discription for the items appears. You can scroll the pages by moving the cursor (left/right).



3. After knowing the items, **ESC** to leave the Display. Press 📄 to:

- **Hide All/Show All items**
- **Hide Points/Show Points**
- **Hide Streets/Show Streets**

4. At this stage, if you wish to hide/show only some of the symbols, you can move the Joystick to the symbols you wish to change and press ↵ to hide/show the check mark.

5. To memorize the settings and exit this function, use the Joystick to highlight [V] and press ↵ to confirm. In case of error, you can also exit without memorizing the settings by highlighting [X].

8.3.9 Menu: Auto-Routing-Function

Go to the map display, press 2 Seconds and the ↵ button to come to the following function:

a. **GoTo**- function, to go directly to a focussed point.
b. **Startpoint, Endpoint** and Middlepoint to define a Auto-Route
c. **Calculate** to calculate the Auto-Route,
d. **Guide on/off** allows the activate/deactivate the guiding.
e. **Edit AR** to reach the menu Navigation Route, to edit the Auto- Route start functionalities
f. **Waypoint**, to define a waypoint on the actual or on focussed Position.

To define reference points (Way-, Start-, End- and Middlepoints, point the wanted position in the map by moving the, press 2 Seconds on the ↵ button and choose the Typ.

To create a ***Auto-Route***, you have to define Start- and Endpoint, by pressing again 2 Seconds on the ↵ button and select **Calculate**. Confirm the choise wit ↵.

By using the ***GoTo-Function*** the calculation start from the actual position to the chosen point in.

Confirm with ↵ and leave the menu with ***ESC.***

8.4 Data Page

The Trip-PC shows the received and calculated GPS Data:

1. **Speed** of the trip (current, average and maximal),
2. **Track** the direction to the goal,
3. **Trip Odom** Distance from the s seit Beginn der To tart point,
4. **Trip Time**,
5. **Altitude** above see level,
6. **Signal**,
7. **Koordinats**,
8. **actual Time** and
9. **Date**.

Move the cursor (left/right) to show this information in a difference size in the display.

8.4.1 Menu of the Data Page

Press 📄 to get this submenu, were you can select:

a. **Trip reset**, before starting a Trip,
b. **Change Field** to select special Information in the display,
c. **Settings,**
d. **Main Menu**.

8.4.2 Trip Reset

MAP 600 is equipped with a special timer which records when you begin using your receiver to navigate and uses this to derive certain information (e.g., average trip speed, distance travelled from the beginning of the trip, etc). Obviously, to receive accurate information from this data, you must reset the timer when you begin a new trip. To use this function, go to the **Data** page and press . Using the Joystick, select **Trip Reset**, then press . The timer will be reset and all of the new data will be displayed correctly.

8.4.3 Change field

Al the data could be selected and shown. Press the button, select **Change Field** and confirm with . Afterwards select the wanted field, press the button and chose information by Moving the Kursor (up/down) and confirm your choise with .

8.5 Compass Page

When you are navigating using a route or the GoTo function to waypoint, the **Compass** page helps to hold your course with respect to the next waypoint by indicating the direction of movement, the distance, and other useful parameters which help you to maintain the set route.

The references are as follows):

a. **NEXT WP** - Shows the designation of the nearest waypoint (route) and/or selected waypoint (GoTo, lower picture).
b. **TO NEXT** – these two fields show the distance to the next waypoint and the estimated time of arrival.
c. **TO DEST** – these two fields show the final distance and the estimated time of arrival.
d. **Compass needle** – shows the direction of the next waypoint.
e. **Direction indictor** – shows the direction of navigation (the circle with the cardinal points underneath moves below it).

8.5.1 Menu of the Compass Page

Pressing the button accesses the following options, which you can highlight with the Joystick and activate using .

a. **Change Next WP** – For selecting a different waypoint than the one chosen in order to monitor the various legs of the route.
b. **Setting** – For access to the settings menu.
c. **Main Menu** – For access to the main menu.

8.5.2 Change Waypoint

When you reach a waypoint, you will want to monitor the data for the next waypoint. Using this command, you can switch to any waypoint on the route.

1. Press and highlight **Change Next WP** with the Joystick, then press ↵. The display will show the list of previously-selected waypoints along the route.

2. Move the Joystick down/up to highlight the waypoint you wish to monitor, then press ↵. The references on the **Compass** page will be updated with this new information.

This command is not active if a route is not previously programmed and selected.

The Compass page is and to reach by pressing the **ESC** button, if GoTo to a waypoint with ShortCut (shorteset Distance) or a normal Route with Set Navi was activated.

8.6 Arrow Guide

If the Auto-Routing-Function was activat, the Arrow Guide Page appears instead of the Compass Page.

Beside following the Auto-Route you can choose between the map display or the Arrow Guide Display. In the Arrow Guide display are shown

a. **Distance**,
b. **Direction**,
c. **Actual Street** and
d. **next Street**.

9 Waypoint

Waypoints are geographical references along a route which can be created at will and used for orientation during a trip towards a destination. The user can do many things with a waypoint, for example give it a name and add it to a route. MAP 600 can memorize up to 1000 waypoints for use individually or along a route.

To a waypoint you can go:

a. ***directly*** by short cut in the map display or with help of the Information in the Compass Page or
b. by ***Auto-Routes*** calculated along streets.

9.1 Creating Waypoint

There are two methods to create a waypoint: using the menu, or during navigation.

9.1.1 Using the Menu

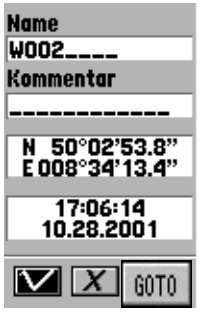
1. From any page, press the button twice , or press once , highlight **Main Menu** with the Joystick, and press ↵. The display is shown in the picture:

2. Using the cursor, highlight **Waypoints** and press ↵. A list of previously programmed waypoints will appear .

3. Press , highlight **New** and press ↵. The display will prompt you to enter a waypoint.

A waypoint is composed of a number of fields (from top to bottom):

a. **Name** (name of the waypoint) is written with a W followed by a progressively higher number
b. **Comment** to add reminder comments (e. g., obstacle)
c. **Current Coordinates** (in this example, N 52°29'11.0" and E013°32'19.7")
d. The **date** and **time** of creation
e. **Active** is a box which, if checked, displays the waypoint on a map, otherwise the waypoint only appears on the list
f. **GOTO** - You can activate this field, if you like to navigate directly to the selected waypoint without using a route.



5. Once you have finished, use the Joystick to highlight ✓ and press ↵ to confirm, or exit without memorizing the waypoint by highlighting X and pressing ↵.

9.1.2 During the Navigation

1. On the **Map** page, use the cursor to move the cursor to the desired position.

2. Hold down ↵ for 2 seconds choose Waypoint and confirm with ↵.

3. Move on the field ✓ and confirm with ↵ to save the actual Position as a waypoint.

9.2 Modifying a Waypoint

If you wish to modify a waypoint that has previously been programmed, follow this procedure:

1. From any page, press twice 📄 or just once 📄, select **Main Menu** with the joystick and press ↵.

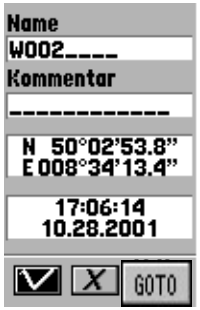
2. Move the joystick down to highlight **Waypoints** and press ↵. The entire list of all waypoints will be displayed.

3. Press ↵: you will enter the waypoint list and can then select a specific one

4. Move the Joystick up/down to highlight the desired waypoint and press 📄. A list of commands will appear:
- **New**
- **Edit**
- **Delete**
- **Delete** All
- **GOTO**

5. Move the Joystick up/down to highlight **Edit** and press ↵ to confirm. The following screen will appear (picture):

6. A waypoint is composed of a number of fields:
- **Name** (of the waypoint) is written with a W followed by a progressively higher number
- **Comment** to add reminder comments
- **Current Coordinates**
- **The date and time of creation**
- **Active** is a box which, if checked, displays the waypoint on a map, otherwise the waypoint only appears on the list
- **GOTO**



7. Move the Joystick up/down or left/right to highlight the field being modified (e.g., **Name**) and press ↵ to modify: the first character in the field will be highlighted.

8. Move the Joystick left/right to select a character from the field, then move the Joystick up/down to change the character.

9. As desired, repeat the previous step to change each character in a field, then press ↵ to confirm.
10. Change other fields by repeating steps 5 through 7.

10. Once you have finished, use the Joystick to highlight [V] and press ↵ to confirm, or exit without modifying the waypoint by highlighting [X] and pressing ↵.

The **Aktiv** button you can only activated or deactivated by using the ↵ button.

Waypoints added to the list may be marked with an asterisk on their right-hand side. This indicates that they have been added to a route.

9.3 Starting the GoTo Function to a Waypoint

There are two possibilities to create the way to a waypoint.

a. **Auto-Route** (automatically guiding along streets)
b. **Short Cut** (direct and shortest Way shown by Airline and compass)

a. Use the same steps like in point 9.2 until point 7, chose the waypoint with help of the cursors and the ↵ button. Move the cursor to the [GOTO] button and confirm with ↵, to calculate the Auto-Route to the chosen point.

b. If ypou want to have the direct way showing by Short Cut in the mapdisplay or on the compass oage (direction, distance and time) press . In the display **Short Cut** appears. Confirm with ↵, to calculate the way.

9.4 Deleting one or more Waypoints

If you want to delete a previously programmed waypoint:

1. Follow steps 1 through 4, as described in par.9.2.

2. Follow step 5, selecting the **Delete** command and press ↵. The display will request that you confirm this, with **Are you sure?**
3. If you wish to delete the waypoint selected, press ↵, otherwise press **ESC** to exit without deleting the waypoint.

This function will not allow you to delete a waypoint marked with an asterisk. This symbol indicates that this waypoint has been inserted in a route. If you wish to delete it, you must first remove it from the route, as described in par.10.6.

9.5 Deleting all Waypoints

If you wish to delete all previously programmed waypoints:

1. Follow steps 1 through 4, as described in par. 9.2.

2. Follow step 5, selecting the **Delete All** command and press ↵. The display will request that you confirm this, with **Are you sure?**

3. If you wish to delete all the waypoints, press ↵, otherwise press **ESC** to exit without deleting the waypoints.

This function will not allow you to delete waypoints marked with an asterisk. This symbol indicates that these waypoints have been inserted in a route. If you wish to delete them, you must first remove them from the route, as described in par.10.6.

9.6 Narrowing waypoint list

If you have a number of waypoints programmed, you can narrow the list to reach the ones you wish to modify or delete more easily.

For example, when at step one in par.9.2, you see a list of waypoints:

1. Ensure the **Name** field is highlighted, as described above (not the list of waypoints), and press ↵.

2. Use the Joystick to change the characters in the **Name** field to view only the waypoints which contain the same characters in the same position on the list. The character _ (underscore) automatically accepts any character.
Example: you have 5 waypoints with these names:
- **W001**
- **W002**
- **PORT**
- **HOME**
- **LIGHTHOUSE**

If you insert _ **O** _ _ _ _ _ _ into the **Name** field, you will see only the waypoints **PORT** and **HOME** (because the second letter is O); if instead you insert **W** _ _ _ _ _ _ _ into the **Name** field, you will only see the waypoints **W001** and **W002**.

10 ROUTES

The Map600 allows to create two different types of Routes:

c. **normal Routes** includes two or more waypoints to show the Way to the Endpoint. On this way you can create 50 Routes with up to 150 Waypoints per Route. So the Route shows the way from Waypoint to Waypoint until you reached the goal. The information for the Route you can see during the Navigation on the map- or compass page.

d. **Auto-Routes** are defined with a Start- and Endpoint (Middle points). You can save up to 20 Auto-Routes with automatically guiding along streets. By Moving the Route will by continuously displayed in the map or bigger in the arrow guide display with information about the direction distance and next street name. If necessary the route will be recalculated again.

Bouth Routes could be managed with help of the Route Manager. To open the Route Manager press on every main pagetwo times the 📄 button, or on time 📄 and select with the cursor Main Menu and confirm with ↵. Choose **Routes** and press ↵.

10.1 Normal Routes

10.1.1 Creating

1. Ensure that you have at least two waypoints programmed.

2. From any page, press twice, or press once, highlight **Main Menu** with the Joystick, and press ↵. The display will show the main menu.

3. Using the Joystick, highlight **Routes** and press ↵. The list of previously programmed **Routes in the Route Manager** will appear.

4. Select **Manu Routes** and Press . The display will show the available options on the Routes menu:

a. **Neu**
b. **Bearbeiten**
c. **Löschen**
d. **Alle Löschen**
e. **Setzte Navi**
f. **Lösche Navi**

5. Using the Joystick, highlight **New** and press ↵. The display will prompt you to create a new route:

a. **Name** is written with an R a progressively higher number
b. **Comment** to add reminder comments (e.g., home-work)
c. **Uhrzeit und Datum** der Erstellung

7. If you wish to modify a field (for example the name), use the Joystick to highlight the field and press ↵, then move the Joystick left/right to select the character you wish to modify, and up/down to modify it. Once you have finished, press ↵ to confirm.

8. Press . The display will show the options available:

a. **Add**
b. **Insert**
c. **Delete** (einzelne Wegpunkte löschen)
d. **Alle Löschen** (alle Wegpunkte löschen)
e. **Umkehren**

9. Use the Joystick to highlight **Add WP** (add waypoint – when creating a route, this is the only option available) and press ↵. The display will highlight the entire list of previously programmed waypoints. Press again ↵.

10. You can now select an individual waypoint by moving the Joystick up/down. Once you have selected the first waypoint, press ↵, you will see a 1 to the right of the waypoint; this is the first reference, and is used as a starting point.

11. Add other waypoints by repeating step 10. You will note that waypoints will be assigned progressively higher numbers which will determine the order in which the waypoints are used (the highest number will be the trip destination point). To remove a waypoint from the route, select it and press again ↵.

12. Once you have finished, press **ESC** to exit.

13. Move the Joystick down to highlight and press ↵ to confirm. The display will show the route created (in the exam-

14. Press **ESC** to reach the main page.

10.1.2 Activating for Navigation

To navigate using a previously programmed route:
1. Enter the **Routes** menu (steps 1 through 3 in the previous paragraph. The display (picture) will show a list of programmed routes.

2. Move the Joystick up/down to select the route desired for navigation and press . The display will show the options available.

3. Use the Joystick to select **Set Navi** and press ↵. To the right of the route, an asterisk will appear to signal that the route has been activated.

4. Press to **ESC** exit. At this point, the **Map** and **Compass** pages will refer to the first waypoint.

Obviously, only one navigation route can be activated at a time. Selecting another route overrides the previous route selected.

If you wish to turn off the navigation of all routes, follow the above procedure, selecting **Cancel Navi** at step 3.

10.1.3 Adding a Waypoint to a Route

To add waypoints to a route:
1. Enter the **Routes** menu (steps 1 through 3 of paragraph 10.1).
2. Move the Joystick up/down to select the route to modify.
3. Press . The display will show the options available on the **Routes** menu.
4. Using the Joystick, highlight **Edit** and press ↵. The display will show the route, including the previously inserted waypoints.
5. Press . The display will show the available options.
6. Using the Joystick, select **Add WP** and press ↵. The display will highlight the entire list of previously programmed waypoints.
Press again ↵.
7. You can now select an individual waypoint by moving the Joystick up/down. Once you have selected the first waypoint, press ↵.
8. Press **ESC** to exit.
9. Move the Joystick down to highlight and press ↵ to confirm.
10. Move the Joystick to highlight and press ↵ to confirm.
11. Press **ESC** to return to the main screens.

10.1.4 Inverting the Order of Waypoints

You can invert the order of waypoints so that the starting waypoint becomes the destination waypoint, and vice-versa. This is a useful function, particularly when you are navigation on a route which you would like to return upon. From any page:

1. Press twice .
2. Select **Routes** and press ↵.
3. Select the route where to invert the order of waypoints and press ↵.
4. Press .
5. Select **Invert**.
6. Highlight and press ↵ to confirm. The display will show the modified route.
7. Press **ESC** to return to the main screens.

10.1.5 Inserting a Waypoint between two existing Waypoints

If you wish to drastically modify the waypoint sequence of a route, it may be easier to insert a waypoint between two previously programmed waypoints.
From any page:
1. Press twice .

2. Select **Routes** and press ↵.
3. Select the route to modify and press ↵.
4. Move the Joystick up/down to highlight the list of waypoint and press ↵.
5. Move the Joystick up/down to highlight the waypoint immediately after the position where the new waypoint will be inserted and press ↵; above and underneath the waypoint, you'll see
6. Press . The display will show the options available.
7. To insert a new waypoint before the one selected at step 6, highlight **Insert** by moving the Joystick.
8. Press ↵. The list of all waypoints previously stored will be displayed. Press again ↵.
9. Move the Joystick up/down to select the waypoint for insertion and press ↵.
10. Once you have finished, press **ESC** to exit (the list of all waypoints is displayed).
11. Move the Joystick down to highlight and press ↵ to confirm. The display will show the modified route.
12. Move the Joystick up/down to highlight and press ↵ to confirm.
13. Press **ESC** to return to the main screens.

10.1.6 Removing a Waypoint from a route

To remove a waypoint from a route:
From any page:
Press twice .
2. Select **Routes** and press ↵.
3. Select the route where you want to remove the waypoint and press ↵.
4. Move the Joystick up/down to highlight the list of the waypoints and press ↵.
5. Move the Joystick up/down to highlight the waypoint to delete.
6. Press and then ↵.
7. To confirm, press again ↵.
8. Press **ESC** and move the Joystick up/down to highlight and press ↵ to confirm.
9. Press **ESC** to return to the main screens.

10.1.7 Removing all Waypoints

To remove all the waypoints from a route:
1. Follow steps 1 and 2 of paragraph before
2. Select the routes where to remove all the waypoints and press ↵.
3. Move the joystick up/down to highlight the list of waypoints.
4. Press and select **Delete All**; press ↵.
5. Press ↵ to confirm.
6. Press and select **Add** with the Joystick, then press ↵. You will see the screen where to create a new waypoint.

10.2 Auto-Routes

10.2.1 Calculate Auto-Routes

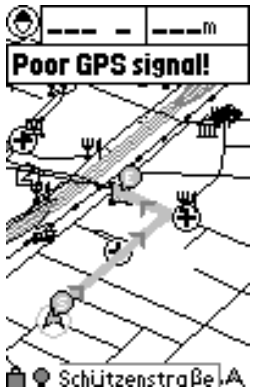
Start point, Middle point and **Endpoint** could be selected by cursor in the map display or with help of the function search for objects. The Route along the displayed streets will be automatically calculated from the Start- to the Endpoint and displayed beside moving.

a) GOTO Funktion
The **GOTO** Function calculates the way from the actual Position to the goal (chosen Object).

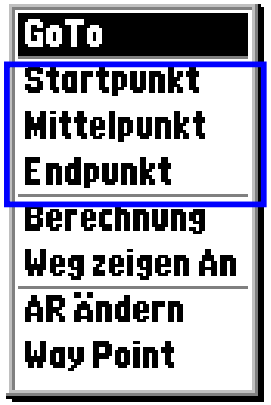
1. Select the goal by cursor
Select the chosen Object in the mapdisplay, press two seconds the ↵ button, move the cursor (up/down) to select **Goto** and confirm with ↵, to calculate the way and start Navigation.

2. Select the goal by searching for Objects

Press and selcet **Search for city** and confirm with ↵. Chose the wanted Object with help of the cursor and the ↵ button. In the final display the results of the searching are shown. Select the Button **GoTo** and press ↵ to confirm. This GoTo procedure also works to a defined waypoint.



b) Create a Auto-Route with Start-, Middle- and Endpoint



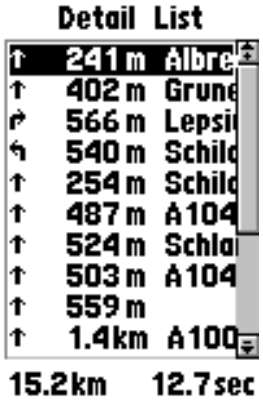
Select the chosen Object in the mapdisplay, press two seconds the ↵ button, to define **Start-, Middle- and Endpoint** with help of the menu. Afterwards press again two seconds on the ↵ button, to select **Calculation** of the Route and start with ↵.

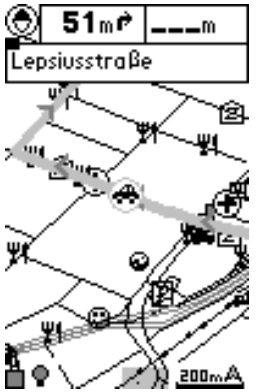
10.2.2 Navigating Route

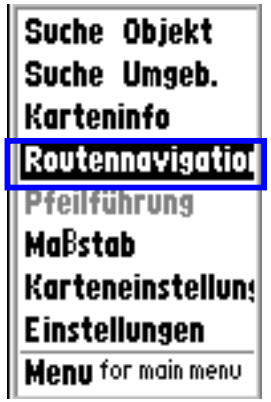
In the menu **Navigating Route** or **Edit AR** the Auto-Routing Information page appears. Here the Route could be changed or recalculated.

Press the button to reach the folowing submenu (picture), which is expained under point 8.3.6.

In the Navigation Mode some functionsare not available. The function **Guide of** finisched the Navigation Mode. The information of the Route (Street, distance and direction) are shown with the function **Route Details**. If you select **Route Demo** a Simulation of the way is shown. Select **Save** to store the created Route.







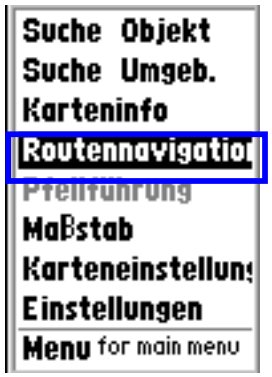
10.2.3 Arrow Guide

If the presentation of the way in the way map display is not so clear, you also can select the **Arrow Guide** display (picture) by pressing **ESC** with a bigger display of information like direction, distance and streetname)

Before turning you can hear a acoustically signal.

10.2.4 Route Manager

In the Main menu (press two times) you can manage the stored Manu Routes (normal Routes with Waypoints) and Auto-Routes.



10.2.5 Route Settings

In the menu settings you can define the following parameter of a route:
1. Route optimise, to calculate the optimal way,
2. Avoid highway, to drive on shorter streets,
3. Auto-Zoom-In, to have the optimal zoom level at the corner and
4. Road match, to use the Auto-Routing- features also in the outdoor area.

11 Track memorizing

When you are travelling using waypoints as reference indicators, leave a track. Tracks consist of a series of positions relative to the actual route travelled, and which are registered at regular intervals (of time and space) during your trip by your MAP 600. This track can be used again when you are traveling along the same route, or for verifying that you have correctly followed a previously programmed route. MAP 600 can memorize up to 2500 positions per route: 8 in its memory, and one for current use. Data points are generated when the device is in movement. The date on which a track is created will be saved with each track.

11.1 Activating the Tracking

1. *From any page*, press the button twice, or press once , highlight **Main Menu** using the Joystick and press ↵. The Main Menu will appear.
2. Using the Joystick, highlight **Track Logs** and press ↵. The following screen in the picture will appear.

3. If you wish, use the Joystick and ↵ button to change the recording mode shown under **Tracking**:
   a. **Off** - excluded
   b. **Fill** – recording of points until the memory space is filled (up to 2500 positions)
   c. **Wrap** – continual recording of points (when the memory is full, new points will substitute the oldest ones, in order of memorization)
   d. **Continue** - Continual recording of points on all 8 tracks available.
4. Press and use the Joystick to highlight **Recording Mode**, then press ↵.
5. If you wish, you can change the distance-travelled interval between one point and the next (Dist. Interval) or the time

interval between one position and the next (**Time Interval**). Use the Joystick and ↵ button as usual.

6. Move the Joystick up/down to highlight **OK** and press ↵ to confirm. You will be returned to the page shown in step 2.

You will be returned to the main screens. If MAP 600 has identified your position, it will begin to record the track, showing this on the map with a dotted line.

If you choose **Fill** at step 3 and the memory space has reached 2500 positions, MAP 500 will prompt you to answer the question **Tracking Full, save or clear?** Press ↵. The display will show the screen appearing in step 2. The next paragraph explains the options available.

11.2 Tracking Options

When the screen from step 2 of the previous paragraph is open, press . You have a number of options available which can be selected using the Joystick at the button:

a. **Clear Tracking** – deletes all tracking data in use
b. **Save tracking** – saves data from tracking in use
c. **Tracking Distance** – length of the tracking covered
d. **Delete** – deletes the previously memorized tracking (selected from the list using the Joystick)
e. **Show ON/OFF** – shows/hides tracking data from the map, selected from the list using the Joystick.

Once you have chosen the desired option, move the Joystick up/down to highlight and press ↵ to confirm. .

12. Troubleshooting

If you run into difficulty with MAP 600, this table might help to resolve your problems. If not, contact your supplier or service centre and describe in as much detail as possible the way in which the device is malfunctioning.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
MAP 600 doesn't turn on	Batteries are not inserted correctly Batteries are low Battery contacts are dirty	Ensure you have inserted the batteries correctly, that the batteries are charged, and, if necessary, clean the contacts	4.2.b
Batteries don't last very long	This can be expected if the GPS energy saver is not inserted Rechargeable batteries are not the correct type, are charged incorrectly, and/or are experiencing a "memory effect" You are using the display backlighting too frequently	Try to insert the energy saver Ensure the batteries are the correct type, that they are properly charged, and/or eliminate the memory effect Backlighting increases consumption. Reduce its use to a minimum	7.1.b 4.2.a 6.3
GPS will not function in operating mode	There is insufficient open space overhead MAP 600 is connected too close to interference devices (televisions, computers, transceivers, air conditioners, etc) Logical malfunction	Move to a more open area. Try to monitor the signals using the Satellites page Move MAP 600 further away from interference devices Remove the batteries for a few minutes and try to insert them again	8.1 - 4.2.b
GPS takes a long time to begin functioning in operating mode	You have travelled more than 500Km with the device turned off and/or with insufficient open space overhead for reception	Ensure you have enough open space overhead, then turn off the device and turn it back on again. You can also try to initialize it.	5.2
GPS doesn't update its position on the display	You are in Simulation mode	Put the device in navigation mode	7.1.b
The displayed time is incorrect	You have chosen an incorrect time difference (time zone difference from Greenwich) for your current position	Select the correct time zone difference	8.3.a
Measurements displayed on the GPS are incorrect or incomprehensible	An incorrect unit of measure for your requirements has been selected (e.g., miles data, if you wish metric data) and/or the reference system on your map is different from the selected one	Enter the correct unit regarding current application and/or use coordinate system and data system fitting to the current map.	7.1.e 7.2.b
GPS has acquired 3 or more satellites, but is not displaying your position	The acquired satellites are all located in one quadrant of the sky (the **DOP** value (Diluition of Position) on the **Satellites** page is too high)	When this happens, MAP 600 will not display your position because the margin of error is too high. Move to another area to acquire satellites from other quadrants	-

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
On the Map page, your position is not longer displayed	You have selected the **View Map** ⊕ mode rather than **Navigation** ▲ mode	Press the ↵ button	Step 4 of 8.2
You are unable to delete waypoints	The waypoints you are trying to delete have been inserted in a route	Remove the waypoints you are deleting from the route	10.6 10.7
You are unable to program waypoint coordinates	You have selected a map reference with a different standard from WGS-1984	You can only program waypoint coordinates using WGS-1984. Select it	7.2.c
You are unable to navigate along a route	Programming a route is not enough; you also have to active it before using the route for navigation	Activate the route for navigation	10.2
The Change Next WP command is disabled	To navigate using a route and select a next waypoint, you must first program a route	Program the waypoints and the route	9 10
Map details are not displayed as they should be	It is possible to show all details or only those which you wish to show (using the correct commands)	Refer to the paragraphs noted to the right of this box, and follow the instructions according to your needs	Step 3 of 8.2 8.2.g
The data being read do not coincide with the data on a paper map	It is possible that the reference system or the design standard of the map is not the same as the one being used in your MAP 600	Refer to the paragraphs to the right of this box	7.2.c 7.2.b
During the recording of the tracking, an error message appears which appears each time you turn on the device	You have reached the maximum capacity of the tracking	Save or delete the tracking	11.2
A PC or other device is not able to receive data from your MAP 600	For PDA's there are existing different standards for the lead connections and communication protocols. Use RS-232 cable only for connections with COM port to PCs and Notebooks. By using MapRoute, always pay attention to start first the data communication at the GPS and thereafter the transmission at the PC. The NMEA interface must be activated since the unit has to deliver the GPS data with NMEA standard to another equipment.	Make sure that you selected the correct COM port and the general NMEA protocol in the used software programs. On newer Notebooks a COM port is missing sometimes. In that case you need an USB lead instead of the RS-232 cable or a seriell "9pin on USB" connection. Use only the associated USB driver!	7.1.c
The data transmission between ALAN MAP500 and MapRoute (on PC) does not occur	By using MapRoute pay absolutely attention to start first the data communication at the GPS and after that the transmission at the PC. When working with MapRoute, the NMEA protocol may not be activated.	By using MapRoute, pay attention to the correct transmission direction! MapRoute 2.00. has symbols like PC->GPS and GPS->PC. Leave the NMEA function switched off. The correct sequence is to be observed, because with this procedure the used COM port number is recognized automatically! A manual COM port selection is neither necessary nor possible!	

13. The Global Positioning System (GPS) network

GPS is a world-wide radio navigation system formed by a group of 24 satellites (21 operating and 3 spares) and their associated ground stations. GPS uses these satellites, appropriately called NAVSTAR (Navigation Satellite Timing and Ranging), to calculate ground positions. The basis of GPS operation is the use of triangulation from the satellites. To triangulate, a GPS receiver measures distance using the travel time of radio signals. However, to measure travel time, GPS needs very accurate timing, plus it needs to know exactly where the satellites are in space. To solve this problem, each of the 24 satellites is inserted into an orbit high enough (12,000 miles) to preclude interference from other objects, both man-made and natural, and to insure overlapping coverage on the ground so that a GPS receiver can always receive from at least four of them at any given time. In addition, compensation is inserted for any delay the signal experiences as it travels through the atmosphere to the receiver.

The GPS network was originally conceived by the U.S. Department of Defense (DOD) to aid navigation.

13.1 How the system works

With the satellites operating at 12,000 miles above the earth's surface, they are arranged in strategic positions and orbit around the earth at a speed of 17,000 miles-per-hour, thereby completing an earth orbit every 12 hours. Each is powered by solar energy; if that fails, they are equipped with on-board backup batteries to maintain operational GPS integrity, and with small rocket boosters to keep them flying along the correct path.

13.2 Satellite Frequency and control signals

Each satellite transmits a low-power radio signal in the UHF frequency range; the frequencies used are designated as L1, L2, etc. GPS receivers, such as the PMR-GPS unit, listen on the L1 frequency of 1575.42 MHz. This signal, since it is line-of-sight, will reach the ground receiver unless it is obstructed by solid objects, such as buildings and mountains.

The L1 signal is accompanied by a pair of pseudo-random signals (referred to as a pseudo-random code) which is unique to each satellite. These codes are identified by the GPS receiver and allow for the calculation of the travel time from the satellite to the ground. If this travel time is multiplied by the speed of light, the result is the satellite range (distance from satellite to receiver). The navigation information provided by each satellite consists of orbital and clock data, plus delay information based on an ionospheric model. Signal timing is provided by highly accurate atomic clocks.

13.3 Ground control

There are five GPS ground control stations - Hawaii, Ascension Island, Diego Garcia, Kwajalein and Colorado Springs - that control the satellites by checking their operational disposition and exact position in space. Four of these stations are unmanned, and the fifth -- Colorado Springs – is the Master station. The four unmanned stations constantly receive data and send it to the Master station. The Master station then provides corrections for satellite Ephemeris constants and clock offsets and, in conjunction with two other antenna sites, uplinks these information to the satellites.

13.4 The GPS receiver

The GPS receiver, (in this case, the PMR-GPS unit), uses NAVSTAR satellite signals as a way of determining exact position on earth. Mathematically, you need four satellite ranges to accomplish these coordinates. Although three ranges are enough, an additional range is required for technical purposes.

So, our position is based on how long it takes for a signal sent from the satellite to arrive at our receiver. Since timing is everything, the satellite signal is almost perfect since it has an atomic clock on board. But, what about our GPS receiver timing? Our receiver certainly contains no atomic clock; if it did, its cost would be prohibitive -- nobody could afford it. To get around this problem, our receiver must take an additional satellite measurement. Hence, it really needs four satellite signals to insure our correct position. Since this fourth measurement, done as a cross check, does not intersect with the first three, our receiver's computer says, in effect, there is a discrepancy in my measurements, and I must not be synchronized with universal time. Since any offset from universal time will affect all of our measurements, the receiver looks for a single correction factor that it can subtract from all its timing measurements that would cause them all to intersect at a single point. That correction brings the receiver's clock back into sync with universal time and, in this way, atomic timing accuracy is in the palm of your hand!

Once our receiver has that correction, it applies to all the rest of its measurements and now we've got precise positioning.

14. Technical characteristics

Map

- Scale view: 50m – 200 Km with 9 levels of zoom (enlarge/reduce)
- Memory card: Compact Flash (CF) by Scandisk or another 100% compatible brand
- Map memory capacity: In combination with Mapshow CRD vector detailed maps can be modified to .LST files and loaded on CF cards.

Navigation

- Waypoints: up to 1000 waypoints, including their names, comments, and display
- Routes: up to 50 routes, each with a maximum of 150 waypoints
- Tracking: up to 9 recordings of movement – 8 in memory and 1 in use, with a maximum of 2500 points each. Movement recording mode modifiable.

Functions

- Receives and synchronizes up to 12 satellites
- Acquisition time:
  - First start-up: 300 seconds, on average
  - Already turned on in the area: 40 seconds, on average
  - Already warm: 15 seconds, on average
  - Speed of satellite acquisition: every 0.1 second
  - Speed of data update: every second

Precision

- Position: 5 – 25 meters
- Speed: within 0.1m/second
- Time: ± 1 µS

Measurement fields

- Altitude: from -1.000 to 18.000 m
- Speed: within 515 m per second
- Acceleration: ± 4 G

Interface
- Optional USB cable for PC

Data
- 219 geographic reference systems pre-programmed in the factor and user-selected

Antenna
- Integrated, with the possibility of an optional antenna with MCX connector

Dimensions and power supply
- Size: 6.2 x 13 x 3 cm
- Weight: 200 gr. including 2 AA batteries and the CF card
  147 gr. (batteries and CF card excluded)
- Batteries: 2 AA batteries (alkaline or rechargeable)

Screen
- 4 shades of grey
- Size: 6.0 x 3.8 cm
- Backlighting: high-contrast electro-luminescent
- Resolution: 100 x 160 pixels

Other
- Buttons: 6 functional plus 1 4-direction Joystick
- Operating environment: from -10° to +70°C
- Storage: from -40° to +85°C

14.1. Assistance

We recommend you to write the serial number of your transceiver in the space provided below. This number is found on the rear panel of the transceiver and will be useful in the event of repair/assistance and/or loss and/or theft.

Serial number _____

14.2 Notes about this manual

Every effort has been made to ensure that the information in this document is complete, accurate, and up-to-date. The manufacturer assumes no responsibility for the results of errors beyond its control. Standard accessories and options can be different according to each country version. The described functions are referred to the software version available at the printing date.
Errors and Omissions Excepted
All rights reserved

15 Appendix A – information about using batteries

The GPS functions with two AA batteries, which should be installed in the battery compartment. The receiver operates using:

- Alkaline batteries (non-rechargeable)
- Ni-MH rechargeable batteries (Nickel-metal hydrate).

A capacity lower than 1300 mAh is not recommended (these devices deliver max. 8 hours operation time and higher capacity batteries are increasing the operation time)!

Although alkaline batteries allow for superior autonomy with respect to rechargeable ones, we suggest using the rechargeable Ni-MH batteries if you are using your MAP 500 frequently as this will reduce operating costs. To extend the battery life, try rotating through multiple sets of batteries.

Remove the batteries from the receiver when not in use for long periods of time. This precaution eliminates the likelihood of battery leakage and corrosion of the receiver. Also, certain circuits are constantly being supplied electricity, even when the receiver is turned off. This consumption is very low, but over time may drain the batteries.

Do not combine old batteries with new ones and/or different types and/or for different uses. Each set of batteries used must be composed of the same 2 elements, and cannot be used separately or for use with other devices. Don`t mix batteries of different brand, too!

Never throw batteries into a fire or bring them close to a source of heat: this may cause explosions and personal injury. Dispose of your batteries according to local regulations.

15.1 Recharging of rechargeable batteries

The type of battery we recommend is a high-capacity (at least 1.300 mAh), rechargeable Ni-MH (Nickel-metal hydrate). Ni-MH batteries have a better capacity compared to normal Ni-Cad batteries, and are less likely to produce a "memory effect" reaction. There are two ways to recharge batteries:

- **Separate recharging of batteries** (outside the receiver) – use a suitable, external battery charger (not supplied) to charge the batteries before putting them into the receiver. Recharge time varies according to the type of charger and the capacity of the batteries utilized.
- **Charge the batteries while they are in the receiver** – use the optional car battery charger. This is connected to the appropriate socket in the receiver 3V Max.

Do not attempt to charge alkaline batteries or other non-rechargeable batteries. Ensure that only 2 rechargeable Ni- MH batteries are used in the battery well of the receiver, with the battery charger connected. Attempting to recharge other types of batteries (for ex. alkaline/Mangan type) is extremely dangerous. Non-suitable batteries may leak liquid, explode, or burn and cause serious damage!

Ensure that the original charger is used. Using an unsuitable battery charger or batteries may damage your receiver or cause explosions or personal injury. When in doubt, contact your supplier.

15.1.1 Checking battery power

When the device is being used, the Satellites page continually displays the battery icon. The internal part of the icon displays the remaining battery power: a full icon indicates high battery power; an empty icon indicates low battery power.

Similar to gas indicators in a vehicle, the indicator is not proportional to the actual charge (e.g., a half-full battery icon does not indicate that exactly half of the battery power remains). Furthermore, this indication varies according to the type of batteries used (alkaline or rechargeable Ni-MH).

15.1.2 Memory Effect on rechargeable batteries

Rechargeable Ni-MH batteries (Nickel-metal hydrate) have almost no "memory effect". This memory effect results in a drastic reduction of autonomy of use of the device, and is triggered if the batteries are regularly recharged before completely running out of battery power and/or when the batteries are not completely recharged.

To avoid this memory effect:

- When possible, recharge batteries only once they have completely run out of power (until the receiver turns off during normal use).

• Do not disconnect the battery charger before the batteries are completely recharged.
• Completely discharge and recharge your batteries at least twice a month.

In any case, the most effective solution for avoiding memory effect is to rotate the use of two sets of batteries, keeping one charged set on hand while the other set is in use in the GPS.

To completely eliminate the memory effect on batteries, discharge and recharge the batteries completely at least three or four times before using them again.

Memory effect should not be confused with the normal life of the batteries, which is on average 300-400 charge/discharge cycles. It is normal for the operating power of the batteries to diminish as the batteries begin to near the end of their life. When this happens, substitute the entire set of batteries.

16. Appendix B – Reference table of pre-loaded maps

MAP 600 supports 219 references from pre-loaded maps (including the most commonly used WGS-84 factor pre-defined) as listed in the below table.

With the choice of national usual coordinate systems, the associated date changes automatically (e.g. POTSDAM with German Grid (Gauss Krueger)

	Datum	dX	dY	dZ	Ellipsoid	Region of use	Name in ALAN
1.	WGS-84	0	0	0	WGS 84	Global	WGS 1984
2.	Adindan	-118	-14	218	Clarke 1880	Burkina Faso	Adindan- Burkina Faso
3.	Adindan	-134	-2	210	Clarke 1880	Cameroon	Adindan- Cameroon
4.	Adindan	-165	-11	206	Clarke 1880	Ethiopia	Adindan- Ethiopia
5.	Adindan	-123	-20	220	Clarke 1880	Mali	Adindan- Mali
6.	Adindan	-166	-15	204	Clarke 1880	Mean for Ethiopia; Sudan	Adindan-Regional Mean
7.	Adindan	-128	-18	224	Clarke 1880	Senegal	Adindan- Senegal
8.	Adindan	-161	-14	205	Clarke 1880	Sudan	Adindan- Sudan
9.	Afgooye	-43	-163	45	Krassovsky 1940	Somalia	Afgooye- Somalia
10.	Ain el Abd 1970	-150	-250	-1	International 1924	Bahrain	Ain el Abd'70- Bahrain
11.	Ain el Abd 1970	-143	-236	7	International 1924	Saudi Arabia	Ain el Abd'70- Saudi Arabia
12.	American Samoa 1962	-115	118	426	Clarke 1866	American Samoa Islands	American Samoa'62
13.	Anna 1 Astro 1965	-491	-22	435	Australian National	Cocos Islands	Anna 1 Astro'65
14.	Antigua Island Astro 1943	-270	13	62	Clarke 1880	Antigua (Leeward Islands)	Antigua Island Astro'43
15.	Arc 1950	-138	-105	-289	Clarke 1880	Botswana	Arc'50- Botswana
16.	Arc 1950	-153	-5	-292	Clarke 1880	Burundi	Arc'50- Burundi
17.	Arc 1950	-125	-108	-295	Clarke 1880	Lesotho	Arc'50- Lesotho
18.	Arc 1950	-161	-73	-317	Clarke 1880	Malawi	Arc'50- Malawi
19.	Arc 1950	-143	-90	-294	Clarke 1880	Mean for Botswana; Lesotho; Malawi; Swaziland; Zaire; Zambia; Zimbabwe	Arc'50-Regional Mean
20.	Arc 1950	-134	-105	-295	Clarke 1880	Swaziland	Arc'50- Swaziland
21.	Arc 1950	-169	-19	-278	Clarke 1880	Zaire	Arc'50- Zaire
22.	Arc 1950	-147	-74	-283	Clarke 1880	Zambia	Arc'50- Zambia
23.	Arc 1950	-142	-96	-293	Clarke 1880	Zimbabwe	Arc'50- Zimbabwe
24.	Arc 1960	-160	-6	-302	Clarke 1880	MEAN FOR Kenya; Tanzania	Arc'60- Mean of Kenya, Tanzania
25.	Arc 1960	-157	-2	-299	Clarke 1880	Kenya	Arc'60- Kenya
26.	Arc 1960	-175	-23	-303	Clarke 1880	Tanzania	Arc'60- Tanzania
27.	Ascension Island 1958	-205	107	53	International 1924	Ascension Island	Ascension Island'58
28.	Astro Beacon E 1945	145	75	-272	International 1924	Iwo Jima	Astro Beacon E'45
29.	Astro DOS 71/4	-320	550	-494	International 1924	St Helena Island	Astro DOS 71/4
30.	Astro Tern Island (FRIG) 1961	114	-116	-333	International 1924	Tern Island	Astro Tern Island
31.	Astronomical Station 1952	124	-234	-25	International 1924	Marcus Island	Astronomical Station'52
32.	Australian Geodetic 1966	-133	-48	148	Australian National	Australia; Tasmania	Australian Geodetic'66
33.	Australian Geodetic 1984	-134	-48	149	Australian National	Australia; Tasmania	Australian Geodetic'84
34.	Ayabelle Lighthouse	-79	-129	145	Clarke 1880	Djibouti	Ayabelle Lighthouse
35.	Bellevue (IGN)	-127	-769	472	International 1924	Efate & Erromango Islands	Bellevue
36.	Bermuda 1957	-73	213	296	Clarke 1866	Bermuda	Bermuda 1957
36a.	Berne	Berna map data for Swiss lattice (Swiss grid)					
37.	Bissau	-173	253	27	International 1924	Guinea-Bissau	Bissau
38.	Bogota Observatory	307	304	-318	International 1924	Colombia	Bogota Observatory
39.	Bukit Rimpah	-384	664	-48	Bessel 1841	Indonesia (Bangka & Belitung Ids)	Bukit Rimpah
40.	Camp Area Astro	-104	-129	239	International 1924	Antarctica (McMurdo Camp Area)	Camp Area Astro

Appendix B – Reference table of pre-loaded maps

	Datum	dX	dY	dZ	Ellipsoid	Region of use	Name in ALAN
41.	Campo Inchauspe	-148	136	90	International 1924	Argentina	Campo Inchauspe
42.	Canton Astro 1966	298	-304	-375	International 1924	Phoenix Islands	Canton Astro'66
43.	Cape	-136	-108	-292	Clarke 1880	South Africa	Cape- South Africa
44.	Cape Canaveral	-2	151	181	Clarke 1866	Bahamas; Florida	Cape Canaveral
45.	Carthage	-263	6	431	Clarke 1880	Tunisia	Carthage- Tunisia
46.	Chatham Island Astro 1971	175	-38	113	International 1924	New Zealand (Chatham Island)	Chatham Island Astro'71
47.	Chua Astro	-134	229	-29	International 1924	Paraguay	Chua Astro- Paraguay
48.	Corrego Alegre	-206	172	-6	International 1924	Brazil	Corrego Alegre
49.	Dabola	-83	37	124	Clarke 1880	Guinea	Dabola- Guinea
50.	Deception Island	260	12	-147	Clarke 1880	Deception Island; Antarctia	Deception Island
51.	Djakarta (Batavia)	-377	681	-50	Bessel 1841	Indonesia (Sumatra)	Djakarta-Batavia
52.	DOS 1968	230	-199	-752	International 1924	New Georgia Islands (Gizo Island)	DOS 1968
53.	Easter Island 1967	211	147	111	International 1924	Easter Island	Easter Island'67
54.	Estonia Coordinate System 1937	374	150	588	Bessel 1841	Estonia	Estonia Coord Sys'37
55.	European 1950	-104	-101	-140	International 1924	Cyprus	Euro'50- Cyprus
56.	European 1950	-130	-117	-151	International 1924	Egypt	Euro'50- Egypt
57.	European 1950	-86	-96	-120	International 1924	England; Channel Islands; Scotland; Shetland Islands	Euro'50- England
58.	European 1950	-86	-96	-120	International 1924	England; Ireland; Scotland; Shetland Islands	Euro'50- North Regional Mean
59.	European 1950	-87	-95	-120	International 1924	Finland; Norway	Euro'50- Finland,Norway
60.	European 1950	-84	-95	-130	International 1924	Greece	Euro'50- Greece
61.	European 1950	-117	-132	-164	International 1924	Iran	Euro'50- Iran
62.	European 1950	-97	-103	-120	International 1924	Italy (Sardinia)	Euro'50-Italy-Sardinia
63.	European 1950	-97	-88	-135	International 1924	Italy (Sicily)	Euro'50-Italy-Sicily
64.	European 1950	-107	-88	-149	International 1924	Malta	Euro'50-Malta
65.	European 1950	-87	-98	-121	International 1924	Mean for Austria; Belgium; Denmark; Finland; France; W Germany; Gibraltar; Greece; Italy; Luxembourg; Netherlands; Norway; Portugal; Spain; Sweden; Switzerland	Euro'50-West Regional Mean
66.	European 1950	-87	-96	-120	International 1924	Mean for Austria; Denmark; France; W Germany; Netherlands; Switzerland	Euro'50-East Regional Mean
67.	European 1950	-103	-106	-141	International 1924	Mean for Iraq; Israel; Jordan; Lebanon; Kuwait; Saudi Arabia; Syria	Euro'50-South Regional Mean
68.	European 1950	-84	-107	-120	International 1924	Portugal; Spain	Euro'50- Portugal,Spain
69.	European 1950	-112	-77	-145	International 1924	Tunisia	Euro'50- Tunisia
70.	European 1979	-86	-98	-119	International 1924	Mean for Austria; Finland; Netherlands; Norway; Spain; Sweden; Switzerland	European 1979
71.	Fort Thomas 1955	-7	215	225	Clarke 1880	Nevis; St. Kitts (Leeward Islands)	Fort Thomas 1955
72.	Gan 1970	-133	-321	50	International 1924	Republic of Maldives	Gan 1970
73.	Geodetic Datum 1949	84	-22	209	International 1924	New Zealand	Geodetic Datum'49
74.	Graciosa Base SW 1948	-104	167	-38	International 1924	Azores (Faial; Graciosa; Pico; Sao Jorge; Terceira)	Graciosa Base SW'48
75.	Guam 1963	-100	-248	259	Clarke 1866	Guam	Guam'63 Guam
76.	Gunung Segara	-403	684	41	Bessel 1841	Indonesia (Kalimantan)	Gunung Segara
77.	GUX 1 Astro	252	-209	-751	International 1924	Guadalcanal Island	GUX 1 Astro
78.	Herat North	-333	-222	114	International 1924	Afghanistan	Herat North
79.	Hermannskogel Datum	653	-212	449	Bessel 1841 (Namibia)	Croatia -Serbia, Bosnia-Herzegovina	Hermannskogel Datum
80.	Hjorsey 1955	-73	46	-86	International 1924	Iceland	Hjorsey 1955
81.	Hong Kong 1963	-156	-271	-189	International 1924	Hong Kong	Hong Kong'63
82.	Hu-Tzu-Shan	-637	-549	-203	International 1924	Taiwan	Hu-Tzu-Shan
83.	Indian	282	726	254	Everest (India 1830)	Bangladesh	Indian- Bangladesh
84.	Indian	295	736	257	Everest (India 1956)	India; Nepal	Indian- India,Nepal

	Datum	dX	dY	dZ	Ellipsoid	Region of use	Name in ALAN
85.	Indian	283	682	231	Everest (Pakistan)	Pakistan	Indian- Pakistan
86.	Indian 1954	217	823	299	Everest (India 1830)	Thailand	Indian 1954
87.	Indian 1960	182	915	344	Everest (India 1830)	Vietnam (Con Son Island)	Indian'60- Con Son Island
88.	Indian 1960	198	881	317	Everest (India 1830)	Vietnam (Near 16øN))	Indian'60-Vietnam
89.	Indian 1975	210	814	289	Everest (India 1830)	Thailand	Indian 1975
90.	Indonesian 1974	-24	-15	5	Indonesian 1974	Indonesia	Indonesian'74
91.	Ireland 1965	506	-122	611	Modified Airy	Ireland	Ireland 1965
92.	ISTS 061 Astro 1968	-794	119	-298	International 1924	South Georgia Islands	ISTS 061 Astro'68
93.	ISTS 073 Astro 1969	208	-435	-229	International 1924	Diego Garcia	ISTS 073 Astro'69
94.	Johnston Island 1961	189	-79	-202	International 1924	Johnston Island	Johnston Island'61
95.	Kandawala	-97	787	86	Everest (India 1830)	Sri Lanka	Kandawala
96.	Kerguelen Island 1949	145	-187	103	International 1924	Kerguelen Island	Kerguelen Island'49
97.	Kertau 1948	-11	851	5	Everest (Malay.&Sing)	West Malaysia & Singapore	Kertau 1948
98.	Kusaie Astro 1951	647	1777	-1124	International 1924	Caroline Islands	Kusaie Astro'51
99.	Korean Geodetic System	0	0	0	GRS 80	South Korea	Korean Geo Sys
100.	L. C. 5 Astro 1961	42	124	147	Clarke 1866	Cayman Brac Island	L. C. 5 Astro'61
101.	Leigon	-130	29	364	Clarke 1880	Ghana	Leigon
102.	Liberia 1964	-90	40	88	Clarke 1880	Liberia	Liberia 1964
103.	Luzon	-133	-77	-51	Clarke 1866	Philippines (Excluding Mindanao)	Luzon-Philip
104.	Luzon	-133	-79	-72	Clarke 1866	Philippines (Mindanao)	Luzon-Philip- Mindanao
105.	M'Poraloko	-74	-130	42	Clarke 1880	Gabon	M'Poraloko
106.	Mahe 1971	41	-220	-134	Clarke 1880	Mahe Island	Mahe 1971
107.	Massawa	639	405	60	Bessel 1841	Ethiopia (Eritrea)	Massawa
108.	Merchich	31	146	47	Clarke 1880	Morocco	Merchich
108a.	MGI	map data for Austrian lattice					
109.	Midway Astro 1961	912	-58	1227	International 1924	Midway Islands	Midway Astro'61
110.	Minna	-81	-84	115	Clarke 1880	Cameroon	Minna- Cameroon
111.	Minna	-92	-93	122	Clarke 1880	Nigeria	Minna- Nigeria
112.	Montserrat Island Astro 1958	174	359	365	Clarke 1880	Montserrat (Leeward Islands)	Montserrat Island Astro'58
113.	Nahrwan	-247	-148	369	Clarke 1880	Oman (Masirah Island)	Nahrwan-Oman-Masirah Island
114.	Nahrwan	-243	-192	477	Clarke 1880	Saudi Arabia	Nahrwan- Saudi Arabia
115.	Nahrwan	-249	-156	381	Clarke 1880	United Arab Emirates	Nahrwan- United Arab Emirates
116.	Naparima BWI	-10	375	165	International 1924	Trinidad & Tobago	Naparima BWI
117.	North American 1927	-5	135	172	Clarke 1866	Alaska (Excluding Aleutian Ids)	N-Amer'27-Alaska
118.	North American 1927	-2	152	149	Clarke 1866	Alaska (Aleutian Ids East of 180øW)	N-Amer'27-Aleutian Ids E
119.	North American 1927	2	204	105	Clarke 1866	Alaska (Aleutian Ids West of 180øW)	N-Amer'27-Aleutian Ids W
120.	North American 1927	-4	154	178	Clarke 1866	Bahamas (Except San Salvador Id)	N-Amer'27-Bahamas
121.	North American 1927	1	140	165	Clarke 1866	Bahamas (San Salvador Island)	N-Amer'27-San Salvador
122.	North American 1927	-7	162	188	Clarke 1866	Canada (Alberta; British Columbia)	N-Amer'27-Alberta
123.	North American 1927	-9	157	184	Clarke 1866	Canada (Manitoba; Ontario)	N-Amer'27- Manitoba, Ontario
124.	North American 1927	-22	160	190	Clarke 1866	Canada (New Brunswick; Newfoundland; Nova Scotia; Quebec)	N-Amer'27- New Brunswick
125.	North American 1927	4	159	188	Clarke 1866	Canada (Northwest Territories; Saskatchewan)	N-Amer'27- Saskatchewan
126.	North American 1927	-7	139	181	Clarke 1866	Canada (Yukon)	N-Amer'27- Yukon
127.	North American 1927	0	125	201	Clarke 1866	Canal Zone	N-Amer'27-Canal Zone
128.	North American 1927	-9	152	178	Clarke 1866	Cuba	N-Amer'27-Cuba
129.	North American 1927	11	114	195	Clarke 1866	Greenland (Hayes Peninsula)	N-Amer'27-Greenland
130.	North American 1927	-3	142	183	Clarke 1866	Mean for Antigua; Barbados; Barbuda; Caicos Islands; Cuba; Dominican Republic; Grand Cayman; Jamaica; Turks Islands	N-Amer'27-Antigua, Barbados

Appendix B – Reference table of pre-loaded maps

	Datum	dX	dY	dZ	Ellipsoid	Region of use	Name in ALAN
131.	North American 1927	0	125	194	Clarke 1866	Mean for Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua	N-Amer'27-Costa Rica, El Salvador
132.	North American 1927	-10	158	187	Clarke 1866	Mean for Canada	N-Amer'27- Mean of Canada
133.	North American 1927	-8	160	176	Clarke 1866	Mean for Conus	N-Amer'27-Mean of Conus
134.	North American 1927	-9	161	179	Clarke 1866	Mean for Conus (East of Mississippi; River Including Louisiana; Missouri; Minnesota)	N-Amer'27-E-Mississippi
135.	North American 1927	-8	159	175	Clarke 1866	Mean for Conus (West of Mississippi; River Excluding Louisiana; Minnesota; Missouri)	N-Amer'27-W-Mississippi
136.	North American 1927	-12	130	190	Clarke 1866	Mexico	N-Amer'27-Mexico
137.	North American 1983	0	0	0	GRS 80	Alaska (Excluding Aleutian Ids)	N-Amer'83-Alaska
138.	North American 1983	-2	0	4	GRS 80	Aleutian Ids	N-Amer'83-Aleutian Ids
139.	North American 1983	0	0	0	GRS 80	Canada	N-Amer'83-Canada
140.	North American 1983	0	0	0	GRS 80	Conus	N-Amer'83-Conus
141.	North American 1983	1	1	-1	GRS 80	Hawaii	N-Amer'83-Hawaii
142.	North American 1983	0	0	0	GRS 80	Mexico; Central America	N-Amer'83-Mexico, Central America
143.	North Sahara 1959	-186	-93	310	Clarke 1880	Algeria	North Sahara'59
144.	Observatorio Meteorologico 1939	-425	-169	81	International 1924	Azores (Corvo & Flores Islands)	Observatorio Meteorologico'39
145.	Old Egyptian 1907	-130	110	-13	Helmert 1906	Egypt	Old Egyptian 1907
146.	Old Hawaiian	89	-279	-183	Clarke 1866	Hawaii	Old Hawaiian- Hawaii
147.	Old Hawaiian	45	-290	-172	Clarke 1866	Kauai	Old Hawaiian- Kauai
148.	Old Hawaiian	65	-290	-190	Clarke 1866	Maui	Old Hawaiian- Maui
149.	Old Hawaiian	61	-285	-181	Clarke 1866	Mean For Hawaii; Kauai; Maui; Oahu	Old Hawaiian-Regional Mean
150.	Old Hawaiian	58	-283	-182	Clarke 1866	Oahu	Old Hawaiian- Oahu
151.	Oman	-346	-1	224	Clarke 1880	Oman	Oman
152.	Ordnance Survey Great Britain 1936	371	-112	434	Airy 1830	England	Ord Sur GB'36- England
153.	Ordnance Survey Great Britain 1936	371	-111	434	Airy 1830	England; Isle of Man; Wales	Ord Sur GB'36- Isle of Man
154.	Ordnance Survey Great Britain 1936	375	-111	431	Airy 1830	Mean For England; Isle of Man; Scotland; Shetland Islands; Wales	Ord Sur GB'36-Regional Mean
155.	Ordnance Survey Great Britain 1936	384	-111	425	Airy 1830	Scotland; Shetland Islands	Ord Sur GB'36- Scotland, Shetland
156.	Ordnance Survey Great Britain 1936	370	-108	434	Airy 1830	Wales	Ord Sur GB'36- Wales
157.	Pico de las Nieves	-307	-92	127	International 1924	Canary Islands	Pico de las Nieves
158.	Pitcairn Astro 1967	185	165	42	International 1924	Pitcairn Island	Pitcairn Astro 1967
159.	Point 58	-106	-129	165	Clarke 1880	MEAN FOR Burkina Faso & Niger	Point 58
160.	Pointe Noire 1948	-148	51	-291	Clarke 1880	Congo	Pointe Noire 1948
161.	Porto Santo 1936	-499	-249	314	International 1924	Porto Santo; Madeira Islands	Porto Santo 1936
161a.	Potsdam 1950 German map data with Gauss Krueger coordinate system						
162.	Provisional South American 1956	-270	188	-388	International 1924	Bolivia	Prov S-Amer'56- Bolivia
163.	Provisional South American 1956	-270	183	-390	International 1924	Chile (Northern; Near 19 øS)	Prov S-Amer'56-Chile-North
164.	Provisional South American 1956	-305	243	-442	International 1924	Chile (Southern; Near 43 øS)	Prov S-Amer'56-Chile-South
165.	Provisional South American 1956	-282	169	-371	International 1924	Colombia	Prov S-Amer'56- Colombia
166.	Provisional South American 1956	-278	171	-367	International 1924	Ecuador	Prov S-Amer'56- Ecuador
167.	Provisional South American 1956	-298	159	-369	International 1924	Guyana	Prov S-Amer'56- Guyana
168.	Provisional South American 1956	-288	175	-376	International 1924	Mean for Bolivia; Chile; Colombia; Ecuador; Guyana; Peru; Venezuela	Prov S-Amer'56-Regional Mean
169.	Provisional South American 1956	-279	175	-379	International 1924	Peru	Prov S-Amer'56- Peru
170.	Provisional South American 1956	-295	173	-371	International 1924	Venezuela	Prov S-Amer'56- Venezuela
171.	Provisional South Chilean 1963	16	196	93	International 1924	Chile (Near 53 øS) (Hito XVIII)	Prov S-Chilean'63
172.	Puerto Rico	11	72	-101	Clarke 1866	Puerto Rico; Virgin Islands	Puerto Rico
173.	Pulkovo 1942	28	-130	-95	Krassovsky 1940	Russia	Pulkovo 1942

	Datum	dX	dY	dZ	Ellipsoid	Region of use	Name in ALAN
174.	Qatar National	-128	-283	22	International 1924	Qatar	Qatar National
175.	Qornoq	164	138	-189	International 1924	Greenland (South)	Qornoq
176.	Reunion	94	-948	-1262	International 1924	Mascarene Islands	Reunion
177.	Rome 1940	-225	-65	9	International 1924	Italy (Sardinia)	Rome 1940
178.	S-42 (Pulkovo 1942)	28	-121	-77	Krassovsky 1940	Hungary	S-42 Pul'42- Hungary
179.	S-42 (Pulkovo 1942)	23	-124	-82	Krassovsky 1940	Poland	S-42 Pul'42- Poland
180.	S-42 (Pulkovo 1942)	26	-121	-78	Krassovsky 1940	Czechoslavakia	S-42 Pul'42- Czechoslavakia
181.	S-42 (Pulkovo 1942)	24	-124	-82	Krassovsky 1940	Latvia	S-42 Pul'42- Latvia
182.	S-42 (Pulkovo 1942)	15	-130	-84	Krassovsky 1940	Kazakhstan	S-42 Pul'42- Kazakhstan
183.	S-42 (Pulkovo 1942)	24	-130	-92	Krassovsky 1940	Albania	S-42 Pul'42- Albania
184.	S-42 (Pulkovo 1942)	28	-121	-77	Krassovsky 1940	Romania	S-42 Pul'42- Romania
185.	S-JTSK	589	76	480	Bessel 1841	Czechoslavakia (Prior 1 JAN 1993)	S-JTSK
186.	Santo (DOS) 1965	170	42	84	International 1924	Espirito Santo Island	Santo DOS'65
187.	Sao Braz	-203	141	53	International 1924	Azores (Sao Miguel; Santa Maria Ids)	Sao Braz
188.	Sapper Hill 1943	-355	21	72	International 1924	East Falkland Island	Sapper Hill'43
189.	Schwarzeck	616	97	-251	Bessel 1841 (Namibia)	Namibia	Schwarzeck
190.	Selvagem Grande 1938	-289	-124	60	International 1924	Salvage Islands	Selvagem Grande'38
191.	Sierra Leone 1960	-88	4	101	Clarke 1880	Sierra Leone	Sierra Leone'60
192.	South American 1969	-62	-1	-37	South American 1969	Argentina	S-Amer'69- Argentina
193.	South American 1969,	-61	2	-48	South American 1969	Bolivia	S-Amer'69- Bolivia
194.	South American 1969,	-60	-2	-41	South American 1969	Brazil	S-Amer'69- Brazil
195.	South American 1969,	-75	-1	-44	South American 1969	Chile	S-Amer'69- Chile
196.	South American 1969,	-44	6	-36	South American 1969	Colombia	S-Amer'69- Colombia
197.	South American 1969,	-48	3	-44	South American 1969	Ecuador	S-Amer'69- Ecuador
198.	South American 1969,	-47	26	-42	South American 1969	Ecuador (Baltra; Galapagos)	S-Amer'69- Baltra, Galapagos
199.	South American 1969,	-53	3	-47	South American 1969	Guyana	S-Amer'69- Guyana
200.	South American 1969,	-57	1	-41	South American 1969	Mean for Argentina; Bolivia; Brazil; Chile; Colombia; Ecuador; Guyana; Paraguay; Peru; Trinidad & Tobago; Venezuela	S-Amer'69-Regional Mean
201.	South American 1969,	-61	2	-33	South American 1969	Paraguay	S-Amer'69- Paraguay
202.	South American 1969,	-58	0	-44	South American 1969	Peru	S-Amer'69- Peru
203.	South American 1969,	-45	12	-33	South American 1969	Trinidad & Tobago	S-Amer'69- Trinidad,Tobago
204.	South American 1969,	-45	8	-33	South American 1969	Venezuela	S-Amer'69- Venezuela
205.	South Asia	7	-10	-26	Modified Fischer 1960	Singapore	South Asia
206.	Tananarive Observatory 1925	-189	-242	-91	International 1924	Madagascar	Tananarive Observ'25
207.	Timbalai 1948	-679	669	-48	Everest (Sabah Sarawak)	Brunei; E. Malaysia (Sabah Sarawak)	Timbalai 1948
208.	Tokyo	-148	507	685	Bessel 1841	Japan	Tokyo- Japan
209.	Tokyo	-148	507	685	Bessel 1841	Mean for Japan; South Korea; Okinawa	Tokyo-Regional Mean
210.	Tokyo	-158	507	676	Bessel 1841	Okinawa	Tokyo- Okinawa
211.	Tokyo	-147	506	687	Bessel 1841	South Korea	Tokyo- South Korea
212.	Tristan Astro 1968	-632	438	-609	International 1924	Tristan da Cunha	Tristan Astro'68
213.	Viti Levu 1916	51	391	-36	Clarke 1880	Fiji (Viti Levu Island)	Viti Levu 1916
214.	Voirol 1960	-123	-206	219	Clarke 1880	Algeria	Voirol 1960
215.	Wake Island Astro 1952	276	-57	149	International 1924	Wake Atoll	Wake Island Astro'52
216.	Wake-Eniwetok 1960	102	52	-38	Hough 1960	Marshall Islands	Wake-Eniwetok'60
217.	WGS 1972	0	0	0	WGS 72	Global Definition	WGS 1972
218.	Yacare	-155	171	37	International 1924	Uruguay	Yacare
219.	Zanderij	-265	120	-358	International 1924	Suriname	Zanderij